The Veterinary Record

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S., 1888.

No. 42. OCTOBER 19, 1935. Vol. XV.

General Article

THE ACCREDITED HERDS SCHEME AS A POSSIBLE FIRST STEP IN THE ERADICATION OF BOVINE TUBERCULOSIS IN WALES*

D. J. ANTHONY, M.R.C.V.S., D.V.S.M.

The two important schemes launched this year and designed to improve the health of dairy herds are the Attested Herds Scheme of the Ministry of Agriculture and Fisheries, and the Accredited Producers Roll Scheme of the Milk Marketing Board.

It is not my intention to deal with the Attested Herds Scheme, as that appears to be primarily designed to assist those milk producers who have already taken the necessary steps to have their milk brought up to Grade "A" standard. For this scheme the producer must submit evidence that his tuberculin-tested herd has been free of reactors for at least two testing periods, with a six months interval between each test, before he can obtain any benefit from the free testing which the Ministry are prepared to grant. Thus a considerable time must elapse before a milk producer who does not produce milk of Grade "A" standard can submit his application to the Ministry.

The Accredited Producers Scheme, on the other hand, offers greater possibilities for the preliminary cleaning up of dairy herds, in that it gives a monetary inducement to the farmer who has hitherto taken no steps to raise the standard of his milk, and so encourages him to bring it up to Grade "A" quality, without any lavish expenditure of capital. It appears to be a sound policy to encourage the majority to improve the quality of their produce *first*, rather than to concentrate upon improving the comparatively few producers who have already forged ahead of their fellows in that respect.

The Milk Reorganisation Commission recommended the early adoption by the Milk Marketing Board of an Accredited Herds Scheme, and the scheme which was established on May 1st of this year is an attempt to carry out the recommendation of the Commission.

This scheme relates to the production of milk rather than to its sale, and for that purpose the requirements are those appertaining to the Grade "A" Milk Producer's Licence. The annual licence will cost the producer one guinea; whilst the local authorities who issue such licences in many cases carry out milk sampling and veterinary inspection of herds free of charge to the producer, in other cases a low charge is made for these services. Herd inspections, after the first, will take place once every three months and will consist of a clinical inspection, there being no compulsory tuberculin testing. The Milk Board will establish a central fund from a small levy on all milk produced, and from this fund all farmers on the Roll of Accredited Producers will receive a bonus amounting to 1d. per gallon of milk *produced*, the farmer being under no obligation to *sell* his milk as Grade "A." Those farmers who are already producing Grade "A" (T.T.) and "Certified" milk are also entitled to enter the Roll of Accredited Producers and so qualify for the bonus.

The conditions governing the sale of Grade "A" milk as applied to producers are, in brief, that no tuberculin-tested reactors shall be added to the herd, the cows shall be examined by a veterinary surgeon once every three months, diseased animals shall be isolated or removed from the herd, a register of the milch cows will be kept, and the animals suitably marked. General cleanliness of cowsheds, cows, milkers and utensils, adequate lighting and ventilation, and the sterilisation of utensils are also advised so that the milk may be brought up to the standard laid down for Grade "A," *viz.*:—

(*a*) not more than 200,000 bacteria per c.c.

(*b*) no coliform bacillus in 1/100th of a c.c.

The licensing authority will, of course, require to be satisfied that the arrangements for the production of the milk are such as to comply with the conditions upon which the licence is granted.

I am given to understand that there are about 5,500 Accredited Producers in England, and that at the time of writing this paper Wales, with Monmouth, has about 511. It should be the earnest endeavour of every veterinary practitioner in the Principality to influence his dairy-farming clients to get that number increased until all the Welsh herds are producing milk of Grade "A" quality at the very least.

Bovine Tuberculosis in Wales

There is every reason why veterinary surgeons in Wales should undertake a cam-

* A paper read before the North Wales Division of the N.V.M.A. at Rhyl, on Friday, July 19th, 1935.

paign to clean up the milk supply of the Principality. Statistics relative to the incidence of bovine tuberculosis in Wales, amongst cattle and human beings, are not available, but from certain investigations carried out under the auspices of the King Edward VII Welsh National Memorial Association it would appear that Wales has for the most part shared with England and Scotland in a steady diminution in the human death-rate from tuberculosis, except for certain districts in the north and north-western portions of Wales, where the number of deaths amongst human beings from this disease is still considerable.

In this respect, as was shown by Dr. Wade of the Welsh Board of Health, in his report published in 1927, the Gwyrfai district of Caernarvon is remarkable. Here in this rural area the death-rate is more than double that for the whole county. In Merioneth, again, the Ffestiniog district is another locality with a high death-rate from tuberculosis. Various causes are responsible for these conditions, and it is not suggested that the bovine bacillus plays a very prominent part here, but we do know that the bovine type of tubercle bacillus does play its part and exacts its toll amongst the human population, notably the child population, of Wales as it does elsewhere.

In 1933 the Welsh National Memorial Association published a report by Dr. D. H. Chalke of an investigation into the causes of the continued high death-rate from tuberculosis in certain parts of North Wales, in which report it is stated that

> "a high tuberculosis death-rate in any community is generally due to a combination of adverse circumstances. It depends on the presence of opportunities for infection, and on conditions which predispose to such infection, or which favour the onset of active disease. Thus it is necessary to discuss the sources of infection of both the human and bovine type of tuberculosis, and to consider the methods by which the virus is disseminated . . . .
>
> "Bovine tuberculosis, as judged by the prevalence of non-pulmonary disease, is also well marked in the districts under consideration. Definite information regarding the infectivity of milk is not available, but there is reason to suppose that the number of infected cows is large. Bacteriological examination of milk in Gwyrfai has shown that the possibility of fæcal contamination is great. Much of the milk consumed is obtained from cows kept on smallholdings, where the animals exist under conditions which leave a great deal to be desired."

Dr. Chalke quotes some figures obtained from the Veterinary Department of Bangor University College, which give a low figure of bovine infection in the milk samples examined, only three positive cases in 109 samples, but it is pointed out that such a low figure may have been due to the elimination of "undesirable" cows from the herds when it became known that a survey was to take place. Bacteriological examination of the milk from the north Gwyrfai district showed the presence of *Bacillus coli* in 1/1,000th of a c.c., in 79 per cent. of cases. The report goes on to say:—

> "it is difficult to say to what extent this factor (*i.e.*, cleanliness in milk production) operates in the causation of bovine tuberculosis in Gwyrfai, but there is reason to believe that it occupies a position of no little importance in this connection. Fæcal contamination of milk should always be treated very seriously, especially in districts where it is suspected that tuberculosis in cattle is in excess. A tuberculous cow, though supplying tubercle-free milk from the udder, almost always excretes tubercle bacilli in the fæces."

With regard to Merioneth, we are told that of the number of cows examined in 1930, more than one-half were tuberculous. This appears to be an alarming statement, until we examine the figures, when we find that the total number of cows examined is so small as to represent a tiny proportion of the total cow population of the county. In the few samples collected, no positive cases were found. Mention is also made of the belief that Welsh Black cattle are alleged to be somewhat resistant to tubercle infection. It is concluded that whilst definite evidence as to the prevalence of bovine tuberculosis is lacking, there is reason to suppose that it is by no means uncommon.

Investigations carried out by Dr. Tytler's department of the Welsh National Memorial Association relative to the bovine type of infection in human patients in Wales show that from 450 positive guinea-pig inoculations cultures were obtained in which the bacillary type was studied. Two per cent. were definitely bovine, and if certain doubtful cultures are included this shows 5 per cent. to be of bovine origin. In addition, there were 122 positive inoculations from which cultures were not typed. No growth was obtained in 26 of these, and this group is considered to have a higher probability of bovine type than the general average, since it is a type more difficult to grow. In 22 cases the cultures were lost before the type was decided. These also had a greater probability of bovine type than the general average, since a decision was not made on the primary culture, and there was some suspicion of their being bovine. Allowing a somewhat

generous percentage, it is shown that 8 per cent. of the material examined was of bovine origin.

Investigations made at the South Wales sanatoria would suggest that if the bovine type of organism is frequently found in pulmonary infection in Scotland and northern England, it does not appear to be the case in Wales, as Drs. Tytler and Duggan found that in 123 cultures obtained from patients at the South Wales sanatoria in 1934, only one of these proved to be of the bovine type.

As far as the mortality from phthisis amongst the human population of Wales is concerned, the counties chiefly affected are Caernarvon, Carmarthen, Cardigan, Merioneth. In Caernarvon the "black areas" were chiefly of an urban character, whereas they were mostly rural in Cardigan. Between 1928 and 1931 the Welsh mortality from tuberculosis was most concentrated in the rural districts and was 56 per cent. in excess of that of England. Working on bovine tuberculosis amongst human beings in England, Cobbett, Eastwood, F. Griffith and Stanley Griffith found that in 116 cases of cervical gland tuberculosis, 46·5 per cent. were of bovine origin. In 476 cases of bone and joint tuberculosis, 18·3 per cent. were due to the bovine type, in England, and in Scotland 28·6 per cent. were caused by the bovine tubercle bacillus. In numbers of other cases the following percentages were found:—

Lupus	50·8%	bovine type
Scrofuloderma	38·4%	„ „
Genito-urinary tuberculosis	17·6%	„ „
Tuberculous meningitis ..	16·6%	„ „
Pulmonary tuberculosis .	1·31%	„ „

In *post-mortem* examinations of material from children, in 113 cases the bovine organism was responsible for the deaths of 17·7 per cent., whilst in 46 cases the bovine organism was responsible for the deaths of 41·3 per cent.

In a report on 26 cases of pulmonary tuberculosis amongst human patients in Copenhagen, due to the bovine bacillus, most of the patients admitted having had raw milk frequently, but three of these denied ever having had raw cow's milk.

It is stated that in dairy-farm workers the possibilities of infection with the bovine type of tubercle bacillus are many, in part through direct contact with the tuberculous cow, and partly through inhalation of infected dust from the cowsheds, and of droplets coughed out by cattle with pulmonary lesions. In six cases of primary conjunctival tuberculosis in milkers the bovine tubercle bacillus was isolated.

Although one is unable to obtain definite evidence relating to the incidence of the disease in all the herds in the Principality, one can, by reviewing the published work regarding the disease as it affects Wales, both in human and animal patients, obtain sufficient evidence to demonstrate the importance of doing something, however small, to minimise the effect of this "white plague" in our native land. Although the bovine tubercle bacillus does not play such a prominent part as the human type, it does contribute its quota to human suffering, and if we can reduce that tale of suffering in some small degree, it is our plain duty to do so, and for that reason I would suggest that the time is more than ripe for the various interested bodies—the farming community, public health authorities and the veterinary profession in Wales—to come together and make a concerted effort to clean up the milk supply, and as a first step towards a "tubercle-free" animal population in Wales the Accredited Producers Scheme seems well suited for the purpose.

Veterinary Inspection in Wales

As concerning the appointment of veterinary surgeons to carry out the quarterly inspections under the Accredited Herds Scheme, conditions in Wales at the present time are such as to make any scheme in which lavish expenditure of public funds plays a part, undesirable. Wales is chiefly a country farmed by the "peasant-farmer" type, whose holding is generally of small acreage. Farms with a large acreage as are found in England are not very numerous in Wales. Economically the Welsh counties are not so well off as the English counties, and a scheme of appointments that may best suit England is not always applicable to Wales. There are few Welsh counties that can afford the employment of whole-time veterinary officers for this inspection work. The majority of Welsh counties, being primarily dependent upon agriculture, can ill afford to employ whole-time veterinary staffs, whilst at the same time expecting the agricultural industry to support the veterinary practitioners already resident in the county.

When the West of Scotland Division of the National Veterinary Medical Association drew up their scheme for the eradication of bovine tuberculosis they suggested that the preliminary work of eradication should be done by the local veterinary practitioner, and as the Accredited Herds Scheme is in the nature of a preliminary step, it seems essential that it should be worked by the practitioner.

In certain Welsh counties the local veterinary practitioners, in agreement with the county authorities, have divided the counties into areas so that each veterinary surgeon will get his share of inspection work. The local practitioner is thus encouraged to take a greater interest in the eradication of disease from his area, and to carry out his work in what may often be a poor district, whilst the farmers are also

ensured of having a veterinary practitioner at hand in case of necessity.

Methods of Detecting the Tuberculous Cow.

As far as the detection of the tuberculous cow is concerned, reliance is at present placed on three methods, *viz.*: (1) clinical examination; (2) tuberculin testing; (3) milk sampling.

There is a fourth method which might well be added to the foregoing, and that is the method of *notification by meat inspectors* of any tuberculous meat condemned by them in local abattoirs throughout the country.

This method has already been tried in a few places with advantage in ascertaining the presence of tuberculosis on farms. The sanitary meat inspector who examines and condemns meat in the rural and urban areas of Wales can be of great assistance to the veterinary surgeon in notifying the latter as to the place of origin of any tuberculous carcases found in the course of meat inspection. The veterinary surgeon could then visit the farm in question and be of assistance to the farmer in clearing up the disease on the farm. The sanitary inspector is under no obligation to do this work, but, given some measure of goodwill between the veterinary surgeon and the inspector, a good deal of useful work can be accomplished in this respect, without adding any unnecessary burden upon the ratepayers.

Owing to the gap between veterinary science and meat inspection as practised in this country, most of the information available from the *post-mortem* inspection of animal carcases in abattoirs is entirely wasted. The sanitary inspector, who usually is delegated to perform this work, reports to his authority from time to time as to the amount of meat condemned, but this information is *never* acted upon by the local authority. What is there to prevent such information being made use of in the eradication of disease?

The notification of disease by the inspector would involve no extra financial outlay and, even if it did, fully 50 per cent. of a meat inspector's work is concerned with tuberculosis, so that any diminution in the incidence of this disease would eventually be of benefit in reducing the work of the meat inspector also.

The chief officers of the Ministry of Health are keen on this work being performed, and I feel sure that if the Welsh Board of Health were approached their hearty co-operation would be forthcoming in obtaining the support of public health authorities throughout Wales.

The inspector should notify the disease in pig carcases as well as beef, as fully two-thirds of porcine tuberculosis is estimated to be of bovine origin, due to the feeding of milk and milk products to pigs. I have found from a survey of infected pigs arriving at a bacon factory, and covering all parts of the British Isles, that tuberculosis in pigs closely follows the disease in cattle, *i.e.*, pigs derived from dairying districts are the most heavily infected. For this reason a survey of infected pigs throws an interesting sidelight on the possibility of infected cows being found in the same area. I have noted as "black areas" certain localities from whence repeated consignments of tuberculous pigs are derived, and as far as concerns Wales, such areas are found in Anglesey, Caernarvon, Denbigh, Flint, Merioneth, Montgomery, Glamorgan and Pembroke. Whilst the other counties of Wales are not free from the disease, it was found that tuberculous consignments came more often from the beforementioned counties. On the whole, Welsh pigs compare very favourably with those of England, Scotland and Ireland from the tuberculosis aspect, and this would appear to bear out what I have already said regarding the possibility of Welsh dairy cattle not being very heavily infected with the disease.

If this scheme of notification of diseased meat is to be at all effective, it should be a direct notification from the meat inspector to the veterinary surgeon concerned. I have experienced such a scheme at work through medical officers of health in various counties, but it was a failure owing to the fact that few medical officers bothered to pass the information on to the appropriate veterinary inspector, whilst there was at that time an added difficulty in tracing animals bought through dealers in markets and fairs. In spite of such obstacles some good work was done in the few cases where veterinary surgeons were available to carry out the necessary farm inspections.

As instances of what can be accomplished when the notification work is carried out direct to veterinary authorities, I would mention a case where, for a short experimental period, in districts where conditions were by no means ideal, *i.e.*, animals having changed ownership many times, and farms being situate at a very long distance from the veterinary inspector's premises, yet 450 cows, 337 other cattle, and 589 pigs were examined by veterinary surgeons. Induration of the udder was found in 30 cows, whilst on three farms cows had been removed under the Tuberculosis Order. That work was done at a time when dealers were under no obligation to keep a record of the movement of the animals they handled, and the notification was from one bacon factory, as a result of finding tuberculosis in pig carcases only.

The Movement of Animals (Records) Order has now made it obligatory on all dealers to keep a record of the movement of the animals dealt with, so that the difficulty of tracing

animals from the abattoir back to the farm has largely been overcome.

In another case, a veterinary officer's certificate notifying a farmer of some tuberculous material condemned from a consignment of his pigs, led to enquiries from the farmer as to how he could avoid such losses in future and breed tubercle-free pigs. It transpired that the affected pigs had received milk as a part of their diet. The farmer was advised to call in his veterinary surgeon to inspect his animals. This was done and a cow with a diseased udder was found, as a result of which the farmer decided to have his herd of cows tuberculin-tested.

In another instance a farmer whose pigs had been found to be tuberculous at the abattoir inspection, expressed a desire to have infected lymph glands sent to his local veterinary surgeon with a view to having the material "typed" to ascertain whether the infection was of bovine or avian origin. The dairy herd on this farm was a tuberculin-tested herd, and suspicion rested on the poultry.

Those are a few instances where the farmers have themselves taken the initiative in endeavouring to eradicate the disease from their farms, but numerous other instances could be quoted showing that enlightened farmers welcome any help in the eradication of disease from their livestock.

If the notification of condemned tuberculous meat by meat inspectors is to be of any help to veterinary surgeons in their work of herd inspections under the Accredited Producers Scheme, it is essential that care be taken not to disturb the friendly relations existing between the farmer and the butcher to whom he sells his livestock for slaughter. The meat inspector will obtain information as to the origin of the tuberculous animal slaughtered from the butcher who will be the owner of the carcase, but should that information so given lead to the visit of some officious person on to the producer's farm, then the farmer in question may refuse to sell any more of his fat stock to the butcher concerned. It is essential for the smooth working of such a scheme that the person who visits the farm to inspect the cattle should be someone known to the farmer, and that the visit should be undertaken solely from a desire to assist the farmer in preventing future losses from this disease. For this reason, as far as the Welsh farmer is concerned, the local practitioner would appear to be the man best suited for this kind of work.

In view of the work looming ahead in connection with tuberculosis eradication from animals, I would like to submit the following suggestions for your earnest consideration:—

1. That the veterinary profession in Wales give the Accredited Herds Scheme all the support they can, with a view to bringing all the dairy herds in Wales up to at least Grade "A" standard of milk production.

2. That some central organisation representing the veterinary profession in Wales (a Welsh Division of the National Veterinary Medical Association is obviously the body concerned) approach the Welsh Board of Health in order to enlist their support for a scheme of notification by meat inspectors to veterinary surgeons, of all tuberculous meat condemned in Welsh abattoirs.

3. Should the Accredited Herds Scheme result in the raising of all Welsh milk production to the Grade "A" level, steps could then be taken to have the Principality declared a "special area" for the complete eradication of bovine tuberculosis in its dairy herds.

A good deal of hard work will first have to be accomplished before No. 3 can be reached, but I feel sure that all veterinary surgeons in Wales who are working the Accredited Herds Scheme or are engaged under the various Milk and Dairies Acts and Orders will not fail to find a system of notification by meat inspectors of great help to them in enabling them to ascertain definitely the existence of tuberculosis upon a farm, and so assisting the farmer in its eradication.

Such an additional method, plus the Accredited Herds and existing Schemes, ought to be of benefit to the country and as the "notification" method requires no new legislation, merely goodwill and co-operation, there appears no reason why veterinary surgeons in Wales shou'd not set an example to the world by making use of information at present lying idle, for the eradication of tuberculosis from dairy herds.

Given a measure of goodwill and the necessary co-operation of all concerned, the milk supply of Wales can be raised to Grade "A" level at the very least, and that in the near future; then it is to be hoped that you will not hesitate to take the next step and get the Principality classified as a "special area" for the eradication of bovine tuberculosis completely, so that some of us may yet live to see a "Tubercle-free Wales."

. . . . .

I would like to take this opportunity of thanking Dr. T. W. Wade, of the Welsh Board of Health, for his assistance in enabling me to obtain information regarding the incidence of bovine tuberculosis in human beings in Wales, Dr. D. A. Powell, Principal Medical Officer to the King Edward VII Welsh National Memorial Association, for placing various reports from the Asso-

ciation's officers at my disposal, and Mr. W. A. Hill, of the Milk Marketing Board, for information regarding the Accredited Producers Roll for Wales and Monmouth.

. . . . . .

References

XXI Annual Report (March, 1933), King Edward VII Welsh National Memorial Association.

Report on an investigation into the causes of the continued high death-rate from tuberculosis in certain parts of North Wales, by Dr. H. D. Chalke. (Cofeb Genedlaethol Cymru.)

"Bovine Tuberculosis in Relation to Man," by A. Stanley Griffith, M.D. (February, 1923), Nat. Clean Milk Society.

"Pulmonary Tuberculosis in Wales between 1911-1931." Russell & Salmon. *Jour. Hyg.* October, 1934.

"Bovine Pulmonary Tuberculosis in Man," Tobiesen, Jensen & Lassen. *Tubercle.* Vol. xvi. No. 9. June, 1935.

* * * * *

Discussion

The President (Mr. H. Llewelyn Jones) said he was sure they had all enjoyed hearing Mr. Anthony's excellent paper. The two schemes for the improvement of our milk supply which had been mentioned appeared to be working very well. There must be a beginning to everything, and the Accredited Herds Scheme might, he thought, lead to big things. In Wales, their geographical position would undoubtedly assist them in carrying out developments of the scheme. It had taken a long time to educate the public mind as to the necessity for action in this matter, but now the schemes were being talked of on all hands and the public realised that things were on the move. It was good work and work that would remain, and he hoped that some day Mr. Anthony might be able to claim the credit for "starting the ball rolling" towards the eradication of bovine tuberculosis in Wales. He was sure members would be anxious to speak on the many points raised by Mr. Anthony, and he would ask Mr. Lewis to open the discussion.

Mr. R. L. Lewis said:—

Permit me, in the first place, to thank Mr. Anthony for his very interesting paper, which, I feel sure, has been enjoyed by everyone present here this afternoon.

I had no idea what I was letting myself in for when I blindly accepted our Secretary's invitation to open the discussion on Mr. Anthony's paper, but I have the satisfaction of knowing that there are others, more competent than myself, who will follow me and make up for my shortcomings.

I was rather surprised, at first, that Mr. Anthony had chosen to give us a paper under the title "The Accredited Herds Scheme as a possible first step in the Eradication of Bovine Tuberculosis in Wales," because I have always associated his name with meat inspection, particularly inspection of pig carcases. But I see now why he made the choice: it was with the idea of introducing meat inspection into the general scheme of eradication of bovine tuberculosis in this country. In this I am in entire agreement with him, and the suggestion which he makes regarding the co-operation of the meat inspector and the veterinary inspector, be the latter a practitioner or a whole-time officer, as a means of tracing the origin of tuberculous carcases found at the slaughterhouses, and investigating the disease on the spot, is, in my opinion, an extremely important and essential link in the chain which must be established in dealing systematically with the eradication of the disease.

Mr. Anthony's "black areas," as he terms them, cover nearly the whole of the Principality, with the exception of five counties (including Monmouth), and it would be interesting to hear from him why the incidence of tuberculosis is not so high in those five counties as in the others. Has a survey been made of those five—on the spot, so to speak—with a view to finding out if conditions under which the animals are fed and housed are more hygienic than those of the "black areas"?

When I occupied the post which he now holds, I also kept a record of consignments of pigs from various counties of England and Wales, and at that time the consignments which showed the highest percentage of tuberculosis came from Cheshire. I would be glad if Mr. Anthony could enlighten us as to where Cheshire stands to-day, especially in view of the measures which have been adopted in that county by a whole-time Veterinary Service.

He says that there is every reason why veterinary surgeons in Wales should undertake a campaign to clean up the milk supply in the Principality. I quite agree, but that should not apply to Wales alone. No geographical border is going to help us stamp out tuberculosis; it is a national business, and one that should be tackled nationally, that is, by Great Britain as a whole.

My plan would be, not so much to encourage the production of milk under Grade "A" conditions by paying a *bonus on the milk,* but by assisting the farmer financially, by means of a loan, or any other method, to set about reconstructing his cowsheds, improving the sanitary conditions thereof, and where possible, ensuring a good water supply. I feel sure the farmer would prefer that to the milk bonus. We practitioners know full well the appalling unsanitary conditions which exist on many farms to-day, and I contend this is the first job to tackle under any scheme whose object is the eradication of tuberculosis. Get rid of our "slum" cowsheds, and rear our stock under healthy conditions; then we will be able to start on our task at

the very beginning. *That* should be the first step in the process of eradication of the scourge.

The subject of clean milk and its production should be taught in all rural elementary schools, and the children should be taught the dangers to health accruing from impure milk. It is the coming generation of farmers to whom we will have to look for co-operation in our work in the future. Mention of schools reminds me of the following story. Teacher asked the class what was the best method of keeping milk pure and from turning sour. One bright youth replied, "Please Miss, keep it in the cow." (Laughter.)

I had expected to hear from Mr. Anthony some sort of criticism of the Accredited Herds Scheme. He has not made any, therefore I conclude he must be in favour of it. I mention this because there is some talk at the moment, of a poll to decide the fate of the Milk Marketing Board. I tremble to think of the chaos that would follow were the vote to go against the continuance of the Board. Should it do so, what, I wonder, would happen to the Accredited Herds Scheme?

Finally, with regard to Mr. Anthony's suggestions at the end of his paper, there is every reason to believe that the veterinary surgeons in Wales *will* give their loyal support and co-operation to the Accredited Herds Scheme, realising as they do that it is a step in the right direction. With regard to his first suggestion, I would like to add that a Bureau of Animal Health be established in Wales, to be going on with, which would work in close association with the Welsh Board of Health. England and Scotland might follow after.

Regarding tuberculous meat condemned in Welsh abattoirs and private slaughterhouses, the matter *should* be dealt with by the veterinary officer with the M.O.H. and not merely reported and left at that.

Mr. Anthony's third suggestion would be the natural sequence to the success of suggestions 1 and 2.

In conclusion, I found very little in Mr. Anthony's paper to criticise, but a good deal of food for thought.

I make no apology for the brevity of my effort in opening the discussion because I feel the subject is so immense and so important that time should be allowed for everyone here to have his say. We have a great opportunity this afternoon for everyone to air his views.

I again thank Mr. Anthony for his very interesting paper.

Mr. R. S. Rowlands, who followed, said he was very grateful to Mr. Anthony for his address and also to Mr. Lewis for his opening remarks. The paper was a mine of information to him. He did not feel prepared to offer any criticism, however, until he had seen it in print.

Dr. Montgomerie said he would dispense with the usual formalities of thanking the speaker—he knew Mr. Anthony would take them for granted. He wished first to clear up a point regarding which he thought Mr. Anthony had made a slip. He understood that the Milk Board paid 1d. per gallon, not on every gallon produced, but on every gallon sold. This was an important point. It was a matter of regret that breeding farmers would not benefit much from the scheme since they did not sell milk under the scheme. Mr. Anthony had referred to the incidence of tuberculosis in the Gwyrfai district and Mr. Rowlands would tell them about the remarkable freedom from bovine tuberculosis in milk samples which they had examined from that district. Gwyrfai was a black spot, in his opinion, because the inhabitants suffered the disadvantages of town life, *e.g.*, overcrowding, bad housing conditions, etc., without enjoying the advantages of the town, such as a good water supply, drainage system, etc.

With regard to meat inspection, he asked, if a butcher purchased a beast in the sale ring and removed it to the slaughterhouse, was he obliged to keep a record of that animal? He instanced a case where the butcher never kept a record of the sources of his animals.

A difficulty which arose in many counties was that the veterinary inspector had no power to act after the disease had been discovered, so that it became the duty of the medical officer of health to take action. He suggested that notification should be made to the Clerk to the Council—this was his practice when he found a positive result in the biological test. He did not think, however, that the Accredited Herds Scheme, as at present constituted, would prove to be of much value. He realised that one must creep before one walked, but one must creep in the right direction, and this scheme was not in the right direction. For instance, the scheme did not demand the tuberculin test. This, in his opinion, was wrong, for it was not right to rely solely on the clinical examination of the cow. Judging from Mr. Jordan's report, the routine inspection of cattle in Ayrshire had not given adequate protection to the healthy animals.

He would propose, (1) that the herds should be tested by a veterinary surgeon, and (2) that a bonus of, say 1d. per gallon be awarded to the producer whose herd contains not more than 10 per cent. of reactors, the bonus to continue if, after six months, the percentage does not rise. To the good man with no reactors in his herd a bonus of 2d. or 3d. should be paid. This would encourage the eradication of the disease. The present scheme did not enable him to envisage the eradication of the disease.

Mr. J. H. Wynne said he regarded the proposals put forward by Mr. Anthony as excellent. He was very glad to have been present to have heard the paper read, but he would prefer to have seen it in print and to have had a little time to consider it before discussing it.

Mr. W. T. Rowlands, invited by the President to give his views regarding the incidence of bovine tuberculosis in the Gwyrfai district, said he believed that during the last 18 months about 170 milk samples had been examined biologically every six months and out of 580 samples only four were positive. During the last 12 months samples taken from the whole of Caernarvonshire examined biologically yielded 1 per cent. positives, whereas in certain parts of other counties the figure was as high as 12 per cent. In his experience, Welsh Black cattle could not

be considered to possess any special immunity to the disease, as had commonly been stated.

He would like to ask Mr. Anthony if the tuberculosis found in his examination of pig carcases was an infection of bovine or avian origin.

Mr. J. Cane thanked Mr. Anthony for his stimulating address. He had no observations to offer with regard to the proposals suggested by him, but he must differ from the last speaker in his view regarding the incidence of tuberculosis in Welsh Black cattle. In his opinion the cows of that breed were generally very healthy and had fine udders.

Mr. J. N. Bowen instanced a case which had come to his notice where a tuberculous carcase would have been offered for sale, albeit unwittingly, had he not noticed the condition during a casual visit to the butcher. Such an experience convinced him of the need for a satisfactory system of meat inspection in Wales where it was obvious that the private slaughter-house was bound to predominate.

The President said he could not agree with the view expressed by Dr. Montgomerie that the Accredited Herds Scheme was of little value. He believed that some benefit must accrue from the clinical examination of herds four times in a year. It was possible during these examinations to "spot" a cow going wrong. He admitted, however, that the tuberculin test should be the ideal. But which herds, he asked, would be the best in five years' time, those which had been examined clinically, or those which had not? He feared that the high rate of bonus suggested by Dr. Montgomerie would be impracticable. Where was the money to come from? He would like to ask Mr. Anthony whether he knew of any regulation whereby a farmer could be compelled to put his shippon in a sanitary condition.

Mr. H. Burrow spoke of the arrangements for notifying the disease at the abattoir with which he was associated. He made it a practice to notify the Chief Constable or Chief Veterinary Officer of the area from which it had come. He estimated that about 40 of the 1,500 calves slaughtered annually were tuberculous.

Criticising the scheme, Mr. Burrow said he thought they were starting at the wrong end of the problem of eradication. The mistake was made of testing cows instead of calves. He believed that 50 per cent. of tuberculosis in calves was congenital and therefore a system of eradication must include the early testing of calves. He would like to see the Ministry take over an area of, say, ten miles radius where cattle breeding was being actively pursued, and with the co-operation of the farmer it would be possible to isolate and build up tubercle-free herds. It was folly to contemplate eradicating the disease by dealing with herds scattered here and there.

The Reply

Mr. Anthony, replying to the discussion, said he would endeavour to reply to the points raised by the speakers in order.

Mr. Lewis had asked why the incidence of tuberculosis was so high in the counties he mentioned. He, the speaker, believed the reason was that these areas were the centres of pig breeding. But after reading the reports from which he had quoted he was of the opinion that the incidence of the disease in Wales was generally low, and that was why he suggested that a scheme of eradication might be applied to Wales alone. The cost would not be so great as that of a scheme embracing the whole of Britain. He agreed with Mr. Lewis regarding the necessity for clearing up the "slum" cow-sheds. It was, of course, already a condition that the sheds must be approved by an inspector. It was not within his province to discuss the policy of the Milk Marketing Board, but he believed that it would be a national calamity if the Board were to cease functioning. He also agreed that it would be in the interests of Wales to have some form of Bureau of Animal Health, but he had tried to avoid suggesting further legislation in his paper.

With regard to Dr. Montgomerie's remark about the 1d. per gallon bonus, his statement was taken from the Milk Marketing Board's Memorandum. He was glad to see that Dr. Montgomerie's experience bore out his (the speaker's) contention that the incidence of the disease was low. The difficulty with regard to notification was important, for he did not think that the M.O.H. was the best man. There was also an objection to reporting cases to the police: many farmers took exception to the presence of a policeman on their farms.

He disagreed with Dr. Montgomerie regarding the value of the scheme. He was of the opinion that it was a step in the right direction and they must all agree that people who had never before thought of clearing up their herds were doing so now in order to secure the bonus. It was, of course, most essential that the clinical examination should be done thoroughly.

Mr. Rowlands had spoken of the immunity of Welsh Blacks to the disease. This had been mentioned in the King Edward VII Memorial Report, but he was unaware that there was any definite evidence in support of the view.

Mr. Bowen's difficulty, he thought, could be met by the regulation that three hours' notice of slaughter must be given, and if the inspector failed to attend within a certain time, the butcher was then at liberty to dispose of the carcase.

In reply to Mr. Llewelyn Jones's query regarding housing, he knew of no regulation which could enforce better housing conditions, but he thought the Attested Herds Scheme would soon be amended in that direction.

"I have tried to answer the questions put to me," concluded Mr. Anthony, "and I hope that you who have the privilege of practising in Wales will spare no effort in assisting in this great problem of eradicating tuberculosis in our native land."

H.M. STATIONERY OFFICE PUBLICATION

The undermentioned has been published recently. Copies can be purchased through any bookseller, or directly from H.M. Stationery Office, at the following addresses: London: Adastral House, Kingsway, W.C.2, and 28, Abingdon Street, S.W.1; Cardiff: 1, St. Andrew's Crescent; Manchester: York Street; Edinburgh: 120, George Street.

	Price Net.	*Post Free.*
	s. d.	*s. d.*
Agriculture and Fisheries, Ministry of:—		
Diseases of Animals Acts, 1894-1927:—		
Report of Proceedings, for the Year 1934 (24-27-0-34)	1 6	1 8

Clinical Communication

A DISEASE OF METABOLISM IN SHEEP

Report of an Outbreak of Disease in Lactating Ewes and Thought to be Due to Disturbance of the Mineral Balance of the Blood

J. G. WRIGHT, F.R.C.V.S.
Royal Veterinary College, London

The following is a report of an outbreak of disease in sheep which occurred in animals pastured in London in the spring of 1935.

The affected flock comprised 173, full-mouthed, Welsh ewes, which had lambed 35 to 14 days previously. Two lambed unexpectedly during the period under review. The animals had been wintered on sparse pasture on the Yorkshire Hills. For lambing they were transferred to richer ground in Derbyshire, but immediately prior to transport to London they were transferred to poorer pasture again. The London pasturage is good. The animals' condition varied from fair to poor.

They arrived in London on the morning of April 19th, after a railway journey of 18 hours. Two animals died 48 hours after arrival, and the peak of the disease was the third day, by which time 12 were dead, and 12 others being badly affected were destroyed. On the fourth day, when treatment was commenced, ten more were affected; on the fifth day—two; the sixth day—one, and the seventh day—one. The total number of animals affected was 38.

Symptoms.—In the majority of cases it was first noticed that the affected animals remained recumbent when approached, or on attempting to rise stumbled and fell due to a partial paralysis of the limbs. Some were lying in a comatose state with the head tucked into the flank. Several cases were "found dead." In others tetanic symptoms were observed: gritting of the teeth with salivation, the head thrown back and the limbs rigidly extended. In the narcotic type response to external stimulation was lessened, whilst in the tetanic type it was increased. In the majority of cases death occurred within four to six hours of the onset of symptoms; in others it was delayed 12 hours. The shepherd informed the writer that all untreated cases died, but it is probable that several mild cases recovered spontaneously. A noticeable feature was a profuse mucous discharge from the nostrils. There was no odour of acetone in the breath, urine or blood.

Diagnosis.—Amongst the conditions which had to be borne in mind were braxy, entero-toxæmia or other anærobic infections, anthrax, plant or inorganic poisoning, mineral deficiency.

Post-mortem Examination (two cases).—Blood smears were negative for anthrax. The only gross abnormality found was that the liver was pale in colour and friable, and resembled that seen in so-called pregnancy disease of ewes (toxæmia of pregnancy). Culture medium was inoculated with the heart blood and spleen pulp, but results were negative.

Treatment.—In view of resemblances of the condition to milk fever in cattle, grass tetany in cattle, and transit fever in mares and cows, all of which are due to disturbances of the mineral balance of the blood, it was decided to treat affected animals with calcium and magnesium.

23. IV. '35.—Nine cases, all severe.

8.30 a.m.—3 grammes calcium gluconate, and 1 gramme magnesium sulphate, in 10 per cent. solution injected intramuscularly.

In five minutes four of the animals were able to rise and walk away to the remainder of the flock. One of these lambed, unaided, one hour later. In these recovery was complete.

At the end of ten minutes the remaining five appeared to be quite conscious, were able to stand, but staggered and fell on moving.

4 p.m.—No new cases. Of the five, three were still standing but staggered and refused food. Two had relapsed. They were lying on the side with the head thrown back; respirations accelerated.

3 grammes calcium chloride with dextrose, 0·3 gramme magnesium lactate, injected intramuscularly into all.

In addition, the two which were down were subjected to udder inflation. These were on their feet at the end of eight minutes, and there was considerable improvement in the others.

24. IV. '35.

9.30 a.m.—Of the five treated the previous evening, two were normal (including one in which mammary inflation was adopted), two were standing but disinclined to feed, and the last (the other in which the udder was injected) appeared quite conscious, lying on its sternum, but was unable to stand.

Three again treated:—

Calcium chloride 3 grammes, magnesium lactate 0·3 grammes intramuscularly. In ten minutes the recumbent animal was able to walk, and the three were put to pasture where they commenced to feed.

* Parts of which were made to a meeting of the Central Veterinary Society, at the Conway Hall, W.C.1, on Thursday, May 2nd, 1935.

Two new cases had occurred. One was found dead, and the other, which was of the tetanic type, soon recovered after injection.

25. iv. '35.
All treated animals normal. One new case, untreated, died after a short illness.

26. iv. '35.
One new case of the paralytic type. At 2 *p.m.* when discovered, the following was given by the mouth: 10 grammes of each sodi. bicarb., mag. carb., and bone meal. 4 *p.m.*—Some improvement, but unable to rise. Calcium magnesium injected. Recovered.
All treated cases recovered.

Summary of Treatment

A.—Single Treatment.
Four Cases.—3 grammes calcium gluconate and 1 gramme magnesium sulphate, by intramuscular injection.
One Case.—3 grammes calcium chloride and 0·3 gramme magnesium lactate, by intramuscular injection.

B.—Two Treatments.
Three Cases.—3 grammes calcium gluconate and 1 gramme magnesium sulphate, and eight hours later 3 grammes calcium chloride and 0·3 grammes magnesium lactate, by intramuscular injection. One of these cases received udder inflation in addition.
One Case.—10 grammes of each: sodi. bicarb., magnesium carbonate, and bone meal—*per os*. Two hours later—3 grammes calcium chloride and 1 gramme magnesium lactate, by injection.

C.—Three Treatments.
Three Cases.—
3 grammes calcium gluconate and 1 gramme magnesium sulphate injected.
3 grammes calcium chloride and 0·3 grammes magnesium lactate injected.
3 grammes calcium chloride and 0·3 grammes magnesium lactate injected.
One of these received udder inflation in addition.

The lambs of the affected ewes were removed immediately the case was discovered, but they were allowed to return to their mothers as soon as these appeared to be normal.

Attempts to include minerals, in the form of bone meal, in the ration of the remainder of the flock, were futile, as the ewes refused to eat bran and oats, chaff, or cut grass.

. . . . .

Second Outbreak

One hundred and four aged ewes, with lambs, arrived in London at 9 a.m., on Saturday, May 11th, after a 20-hour railway journey. The animals had been wintered under similar conditions to those in the previous outbreak, but were kept in the country until after lambing. Two ewes were dead on arrival and 12 others were affected. *Post-mortem* examination (Mr. A. B. Orr) revealed acute fatty changes in the liver.

On examination at 12 noon, the following was the state of affairs:—

Group A.—Six Ewes: Complete coma, respirations slow and shallow, corneal reflex absent in some and sluggish in others; pupils dilated. These appeared to be *in extremis* and two died during examination.

Group B.—Two Ewes: Lying on sternum with head turned towards side. Unable to rise.

Group C.—Three Ewes: Able to stand, but staggered and fell on moving.

Treatment

Groups B and C.—Five Animals: 3 grammes calcium chloride and 1 gramme magnesium lactate by intramuscular injection. There was marked improvement in ten minutes; the two recumbent animals were able to rise. Only two, however, recovered.

The remainder of the flock was taken to pasture immediately after arrival and there has been no further trouble. In this as in the previous outbreak the ewes have a profuse nasal catarrh. The flockmaster states that he has observed this condition this year in several parts of the country.

In this outbreak a change of diet could not be incriminated, but the railway journey would definitely appear to play a part in the etiology of the condition.

There still being 80 ewes with lambs, the remainder of the flock, to be transferred from Leicestershire to London, it was advised that a dozen of these be transported by road, the journey being effected as quickly as possible, it being thought that the length of time that they had been confined in railway trucks was the primary factor. This advice, however, was not carried out, and on June 1st, all the animals were forwarded by motor-lorry. Despite a journey of ten hours (a delay occurring due to a breakdown) these animals arrived in good health and remained so. This batch comprised 80 ewes with 68 lambs. Lambing had occurred seven to 21 days previously. One ewe lambed the morning after arrival.

. . . . .

Discussion

The disease would appear to be similar to "lambing sickness" as described by Greig, Sjollema, Bosworth and Glover, and others. Greig has stated that both milk fever and lambing sickness are caused by acute hypocalcæmia,

but Bosworth and Glover question such a conclusion in the case of lambing sickness. They grant that a fall in blood calcium can be demonstrated in the majority of cases, but record one typical case in which the blood calcium content was normal (10·60 mg. per cent.).

Sjollema considers that the diffusible calcium ion is more important than the total calcium of the blood, and suggests that the ratio of calcium to magnesium is of special significance. He found on experiment that by injecting agents which combine with or inhibit the ionisation of calcium, the calcium/magnesium ratio, is lowered and that narcotic symptoms supervene. In lactation (grass) tetany in cattle, the calcium/magnesium ratio is raised; there is a fall in the blood magnesium and tetany supervenes. Blakemore and Steward, however, investigating the disease in England, found acetonæmia in all cases.

In the disease under review both the narcotic and tetanic types were seen.

Bosworth and Glover have used calcium gluconate alone in the treatment of lambing sickness in doses of 20 grammes (in some cases this dose was repeated), and state that whilst the injection on several occasions produced a transient alleviation in the symptoms, it was not sufficiently marked to inspire hope of recovery. This, however, would appear to be an enormous dose, if it is estimated that the amount of blood in a ewe of 30 kg. is two litres.

Whilst it appears to be established that there is a profound upset in the mineral balance of the blood of affected animals, this finding does not solve the problem of the etiology of the condition. The disease is widespread, not only in this country, but on the Continent and in New Zealand. It occurs mainly in districts where animals are kept under natural conditions, and is rarely seen under the more intensive systems of management. Old ewes are much more liable to attack than young ones. Leslie in New Zealand, states that a high protein diet renders the animal susceptible, and that a sudden change in diet often precipitates the condition. It seems unlikely that the fresh growth of grass in the Spring could be accurately described as high protein diet, and it is of interest to observe that Sjollema has made extensive analyses of grasses from grass tetany districts in Holland, but could not incriminate excess of protein.

Regarding mammary inflation, the late Mr. G. R. Howie, in Northumberland, first suggested this treatment in this country, and it is stated that it is often successful if applied in the early stages of the attack, preferably before the ewe goes down.

As regards prevention, it is suggested that dressing the pastures with lime, or the provision of mineral "licks" may reduce the incidence of the disease. With mountain breeds it may be found that they refuse to eat mineral salts in their diet; in fact, they may refuse artificial foods entirely.

Bosworth and Glover mention an experiment in which ewes were given a complete mineral mixture during the last ten weeks of pregnancy and for more than a month after lambing. The number of cases of lambing sickness seen in these animals and in an equal number of controls was six, three in each group.

With regard to the proportional incidence of the condition, they state that 5 per cent. must be regarded as high. Leslie records 7½ per cent. in a flock of 400, up to ten weeks after lambing. In these transit was not an etiological factor. In the first outbreak under discussion at least 22 per cent. were affected, and it is probable that there were other mild cases which were not seen. In the second outbreak, in which the new pasture could not be incriminated, 14 per cent. were affected.

Another condition to be referred to is equine transit tetany. Green, Allcroft and Montgomerie, investigating this condition in a batch of Welsh pony mares which had been subjected to confinement in railway trucks for 12 hours, found that there was pronounced hypomagnesæmia, as well as hypocalcæmia.

I wish gratefully to acknowledge the help received from my colleagues of the Pathology Department of the College who carried out the *post-mortem* examinations and offered helpful suggestions.

References

Greig: Proc. Internat. Vety. Cong., 1930.

Bosworth and Glover: "Some Observations on the Nature of Certain Diseases of Sheep," Annual Cong., N.V.M.A., 1931.

Sjollema: Abstracts—*Vet. Rec.*, 1934, pp. 21 and 197.

Blakemore and Steward: 3rd Ann. Rep. Inst. Animal Path., Cambridge, 1932-33.

Leslie: Abstract—*Vet. Rec.*, 1934, p. 239.

Udall: "The Practice of Veterinary Medicine," 1933.

Green, Allcroft and Montgomerie. *Jour. Comp. Path. and Therap.* 1935. March. p. 74.

Lord Rayleigh's British Friesian cow Terling Beechnut XXXVIII has, since her calving in March last, yielded 2,033 gallons of milk in 201 days. She is still giving nine gallons daily. In April last this cow created a British record by producing 149½ lb. of milk in one day. She has three separate 2,000-gallon yields to her credit. These were given in her third, fourth and fifth lactation periods. She is a daughter of the deceased Royal Show champion and Register of Merit bull Terling Marthus, whose 2,000-gallon daughters now total 17. Already three of his daughters have produced more than 50 tons (11,200 gallons) of milk in the lifetime.

Annotation

THE PATHOLOGICAL DIAGNOSIS OF SWINE FEVER

It might appear that the first essential to any disease investigation would be to establish its exact nature and pathology—particularly of a disease of such great practical and economic importance as swine fever. Because, having obtained an accurate knowledge of the pathology of the disease it is then possible to assess the definite value of the various lesions as diagnostic criteria—as far as swine fever is concerned the necessity of making a quick and reliable diagnosis needs no emphasis.

At present the control and eradication of swine fever presents numerous problems and as in the case of foot-and-mouth disease, it is difficult to prevent its introduction from other countries. The fact that the clinical symptoms and epidemiology are confusing adds to the difficulties, since many outbreaks are not suspected in the early stages. These difficulties have not been lessened by the fact that an accurate diagnosis in many cases has not been possible.

Although for many years certain macroscopic lesions were accepted as diagnostic of swine fever, investigations into the detailed pathology and histology and significance of these lesions were never carried out and the individual parts played by the virus and secondary invading organisms remained therefore unknown. Even yet in a number of swine fever cases it is impossible to establish a diagnosis from the gross anatomical findings and this is especially true in cases which show at autopsy only a part of the typical complex of lesions such as hæmorrhages in the lymph nodes, kidneys, bladder, large intestine and skin.

In 1930 Seifried, a German worker at the Rockefeller Institute, New York, and Röhrer working at the well-known Insel Reims Institute in Germany independently of each other began an intensive investigation into the histopathology of swine fever, and since that date numerous publications* have appeared from both, which in England have not received the attention and credit so well deserved. Although much information of great practical interest has been obtained there are still problems to be solved, but the fact remains that these studies do indicate the possibility of acquiring a means to a rapid and accurate diagnosis of swine fever which has hitherto been denied. The technique and results of both Seifried and Röhrer were more or less similar and can be summarised together.

Generally the recognised macroscopic lesions of swine fever such as hæmorrhages, hæmorrhagic and anæmic infarction, and necrosis so commonly found in lymph nodes, spleen and kidney, etc., were all shown to be dependent upon specific changes in the smaller blood vessels and capillaries. These lesions consisted of swelling, proliferation or degeneration of the endothelium subsequently followed by hyaline and necrotic changes in the vessel wall and often thrombus formation. (Endarteritis with a tendency to obliteration of the lumen.) A marked inflammatory cell infiltration occurred in the vessel wall. As a sequel to these vascular changes other lesions occurred in the form of (*a*) hæmorrhages by diapedesis in the skin, muscles, serous membranes, lymph nodes, bladder, gastro-intestinal tract, spleen, liver, lung and bone marrow; (*b*) necrosis, *e.g.*, the small necrotic areas in the intestinal mucous membrane, and (*c*) infarction, commonest in spleen and kidney, due to capillary thrombus formation. Under the influence of secondary bacterial infection these changes were intensified with the production of, *e.g.*, the caseous type of pneumonia, ulceration and diphtheritic inflammation of the intestines. These observations indicate with emphasis that the virus primarily affects the endothelium and later the walls of capillaries and smaller blood vessels throughout the whole body and give a satisfactory explanation of the pathogenesis of the other lesions. Seifried contends that the magnitude of the vascular lesions depends on the virulence of the virus and somewhat on the presence of secondary bacterial invaders and that in acute cases degenerative lesions of the vessels predominate while in prolonged cases a proliferative type of vascular lesion is more marked. The lesions described have another interest from the comparative point of view inasmuch as they resemble those in pulmonary blood vessels in human influenza described by Oberndorfer.

Finally, there must be considered the definite encephalitis which occurs in a large percentage of swine fever cases. Many workers in the past have noted cerebral symptoms although Hutyra and Marek state that the spasms, staggering and lethargy are due to hæmorrhages in the meninges and brain substance. Both Seifried and Röhrer described the lesions in the nervous system and showed that these essentially represent an encephalitis similar in type to that of poliomyelitis and Borna disease.

* Seifried, O. (1931.) *J. Exp. Med.* **53.** 277.
———. (1932.) *Ibid.* **56.** 345 and 351.
Röhrer, H. (1930.) *Arch. f. wiss. u. prakt. Tierheilk.* **62.** 345, 439.
———. (1931.) *Ibid.* **64.** 125.
———. (1932.) *Virchows Arch.* **284.** 204.
———. (1934.) *Deuts. tierärtzl. Wschr.* **42.** 637.

Briefly, the lesions consisted of a widespread perivascular cell infiltration, degenerative lesions in nerve cells in nearly all parts of the nervous system and glial proliferation; demyelinisation was absent and specific inclusion bodies could not be found; lesions could often be demonstrated in six days after infection.

It thus appears that in connection with the *post-mortem* diagnosis the following observations of these workers demand real consideration:—

(*a*) The encephalitis: this in the opinion of Seifried has only a limited diagnostic value because in his series it only occurred in 60 to 80 per cent. of cases and because it was considered doubtful whether the lesions were absolutely specific, the probability being that they might be confused with those of swine influenza and other inflammatory cerebral conditions of an unknown nature. A more recent paper by Röhrer (1934), however, gives results of work undertaken to clarify this problem. The brains from normal pigs and from those dying from diseases other than swine fever were examined histologically. The conclusion was that before lesions in the nervous system can be recognised as being part of the swine fever syndrome they must be indicative of an encephalitis in the true sense of the word and independent of other causes of cerebral inflammatory process such as softening, hæmorrhage, etc.

(*b*) The vascular lesions and the lesions in various organs resulting from them: these appear to be far more important as they are invariably present, especially in lymph nodes, kidney and spleen; when present the splenic infarctions are of diagnostic value but they were only found in 40 to 60 per cent. of Seifried's cases and 53 to 60 per cent. of Röhrer's cases.

In the light of these results it is pertinent to realise the fallacy of basing a diagnosis purely on the presence of such lesions as the "button" ulcer and diphtheritic type of inflammation of the intestines which are probably only produced under the influence of secondary bacterial infection. Further it must be remembered that there is the possibility that other ætiological agents may also produce lesions of a similar type. Apart from that, there is still the question of those suspected cases in which only part of the complex is present, and from the gross anatomical findings a diagnosis is impossible; the only resource left would then appear to be transmission experiments—a procedure which would be costly and time consuming.

These results appear therefore of great importance and practical significance and only await further investigation into a large number of naturally occurring cases to confirm what has been observed in the disease experimentally produced. In conclusion, it is obvious that in this country, if the incidence of the disease is to be reduced, a thorough investigation should and must be carried out to determine the possible utility of the histological lesion as a means to diagnosis.

J. R. M. I.

Abstracts

[Diagnostic Significance of Changes in the Lymphatic Glands in Acute Swine Fever. Seifried, O., and Herbstreith, H. (1934.) *Berl. tierärztl. Wschr.* **13.** 50. 230-232.]

In many diseases of swine and especially in swine fever the lymphatic glands exhibit certain changes, becoming enlarged, hæmorrhagic or œdematous. With a view to ascertaining the diagnostic significance of such changes the authors made an histological examination of glands obtained from 20 selected cases. The glands were divided into three groups: (1) those which showed swelling and hyperæmia; (2) those presenting hæmorrhagic infiltration localised in the parenchyma, and (3) those infiltrated throughout with red blood corpuscles and appearing dark red in colour.

The results are described and discussed. The distribution and type of cells present, whilst not peculiar to any one disease, are factors which will assist in arriving at a diagnosis, especially when combined with a knowledge of the situation of the gland, which gives some indication as to the origin of the infection.

N. S. B.

* * * * *

[The Distinction between Chronic Swine Fever and Influenza of Suckling Pigs. Köbe, K., and Schmidt, W. (1934.) *Deuts. tierärztl. Wschr.* **10.** 42. 145 and 163.]

Writers have frequently expressed the opinion that a chronic type of swine fever exists *sui generis* as a separate entity and, in order to verify this, the authors collected details of 72 outbreaks, carrying out experiments with the material which they were able to obtain.

The history of these cases in most instances revealed the previous existence of acute swine fever. Experimentally it was possible to isolate the virus on eight occasions and when sick pigs were put in contact with healthy ones, swine fever, in the acute form, developed.

The epidemiology, *post-mortem* lesions, bacteriology and morbid histology are described

and compared very closely with influenza of young pigs as follows:—

Chronic Swine Fever	*Influenza*
Occurs subsequently to an acute attack and affects animals of all ages.	Only affects young pigs, commonly between the ages of four and six weeks, but sometimes up to twelve weeks.
Usually terminates fatally.	Seldom fatal. There is severe coughing followed by recovery.
Varying degrees of gastro-enteritis found *post-mortem*. The typical lesions found in the acute form rarely present.	Catarrhal bronchopneumonia with marked swelling of the lymphatic glands.
A variety of bacteria may be found in the blood and organs.	*Bact. influenzæ suis* and streptococci in the lungs up to twelve weeks of age, after which time *B. bipolaris* predominates.
The subcutaneous or intranasal injection of extracts of any organs produces the acute form of swine fever.	Intranasal injection of lung extract produces bronchopneumonia in young animals. Bacteria-free filtrates produce all the characters of the disease except the lung changes.

[It is not clear precisely what is meant by *B. bipolaris*. *Bact. influenzæ suis* is presumably *Hæmophilus influenzæ suis*, the hæmophilic organism found by Shope in America to be associated with the filtrable virus in causing swine influenza. (See earlier abstract, *Vet. Rec.* [1935], **15**, 21, 616.)] N. S. B.

* * * * *

[The Diagnosis of Johne's Disease by the Use of Johnin. Minett, F. C. (1935.) *J. Comp. Path. & Therap.* **48.** 2. 125.]

In this article an account is given of 59 cattle which reacted to johnin or were found on *post-mortem* examination to be the subjects of Johne's disease. Most of the animals were from herds in which repeat tests with johnin had been made every three or four months for a period of two years. The johnin used was a concentrated synthetic product prepared by Sheather and it was injected by the double intradermal method in the manner first suggested by Dunkin.

Fifty-three of the 59 animals had reacted to johnin, many of them on more than one occasion. Thirty-nine of the 53 animals were conclusively proved by *post-mortem* examination to be infected with Johne's disease, either by isolation of the causal organism in culture or by microscopical examination of films or sections of the intestine. Of the remaining 14 cases there was presumptive evidence of Johne's infection in eleven, either from the *post-mortem* examination or from the subsequent history of the case. Six of the 59 animals, although suffering from Johne's disease, did not react to johnin; three of the six, however, were tested once only and four of them were at an advanced clinical stage.

In three of the 39 cases referred to the disease was at an early stage and a definite diagnosis was made by cultural methods only. In two cases cultural methods failed and a diagnosis was established by microscopical search of films or sections.

There was nothing to show from the *post-mortem* examinations that the reactions to johnin were connected with tuberculous infection.

Repeat tests with johnin on a number of the animals showed much variation in the local response. This may have been due either to variations in the potency of the johnin or to variations in the allergic state of the animals. Reasons are given why the latter explanation is considered to be the correct one. In any case, the observation shows that in any serious attempt to eradicate the disease repeated testing would be required.

* * * * *

[Experiments on the Value of Protective Inoculation against *Theileria annulata* **of Cattle.** Gilbert, S. J. (1935.) *J. Comp. Path. & Therap.* **48.** 2. 112-116. (4 refs.)]

Gilbert records the results of a small number of experiments which suggest that inoculation methods of obtaining immunity against *Theileria annulata* are not very satisfactory. This is contrary to the findings of Adler and Ellenbogen (*Vet. Rec.*, 1934, 14, 91) who inoculated calves subcutaneously with blood containing *Theileria* —a mortality of only 9 per cent. occurred as compared with 35 per cent. in naturally-infected adults. Adler and Ellenbogen also state that " in certain areas close to Jerusalem theileriasis is rare, and the opportunity for natural infection almost negligible." Gilbert's experience in this matter also differs from that of Adler and Ellenbogen, and he concludes that a true immunity cannot be produced by the method of inoculation but admits that further work is desirable. Evidence is also required as to whether the inoculated animals are equal to uninoculated animals in resistance, milk yield, condition and fertility.

J. S. S.

* * * * *

[Notes on the Human Trypanosomiasis of Southern Rhodesia. Bevan, Ll. E. W. (1935.) *J. Comp. Path. & Therap.* **48.** 2. 97-117.]

Bevan recalls that Dr. Alexander Mackenzie first discovered *T. rhodesiense*, but that it was

a veterinarian (Bevan himself) who first isolated it from man and studied its pathogenicity in laboratory animals. It was not, however, until 1910 that it was described as a new species and named *Trypanosoma rhodesiense* by Stephens and Fantham. It appeared not unlikely that transmission was effected by *Glossina morsitans* and this was subsequently found to be correct. Until then *G. palpalis* had been believed to be the only vector of sleeping sickness.

T. rhodesiense from man is morphologically identical with *T. brucei* from animals and Bevan protested in *The Veterinary Journal* against the coining of the name *T. rhodesiense* both because he did not consider it a species *sui generis* and also because he considered the name suggested was detrimental to colonial development. On the other hand, the disease in man was more or less localised in its occurrence, which was somewhat inconsistent with the widespread distribution of *T. brucei* in animals and its vector *G. morsitans*. Taute showed that *T. brucei* was not infective to himself either by direct inoculation or transmission by *G. morsitans*. Corson confirmed Taute's findings. Corson also attempted to ascertain whether *T. rhodesiense* from man could become *T. brucei* by passage through animals, but obtained no evidence that this was possible. Yorke, Adams and Murgatroyd have shown that when human blood, plasma or serum is added to animal-derived trypanosomes, *T. brucei vel rhodesiense* and *T. congolense*, they are rendered non-infective, while *T. gambiense* remains unharmed by the serum and still infective. But even *T. gambiense* after many passages through animals may lose its resistance to human serum. These authors suggest that *T. gambiense* and *T. rhodesiense* are both derived from *T. brucei* of game, the difference being due to passage through the human host.

There is as yet, however, no definite evidence as to whether the parasite is *T. brucei* in man, *T. gambiense* transmitted by *G. morsitans*, or a species *sui generis* infective to man and animals.

Bayer 205 can be used to cure the infection and is also effective as a prophylactic. It is suggested that the evacuation of natives from certain comparatively restricted areas to tsetse-free country and the use of Bayer 205 as a prophylactic should result in the early elimination of human trypanosomiasis from Southern Rhodesia.

J. S. S.

* * * * *

[**Preliminary Note on the use of Goat Tissue Vaccine alone for the Control of Outbreaks of Rinderpest.** Kerr and Menon. (1934.) *Ind. J. Vet. Sci. & Anim. Husb.* March. pp. 75-80.]

After a brief reference to the early work on vaccination with goat virus and serum simultaneously, an account is given of extensive field trials of goat virus vaccine alone. The practical objections to any policy of wholesale immunisation of cattle against rinderpest are also enumerated, in justification of the present policy of vaccination of contact cattle after outbreaks.

Initially, goat blood vaccine was used. Of 1,765 contact cattle treated, 58 (3·3 per cent.) reacted. Abstracting from these 19 cattle which reacted within three days of vaccination, and are therefore taken to have been at the incubative stage when inoculated, the percentage of reactors is reduced to 2·2 per cent., with 0·57 per cent. deaths. Four out of nine buffaloes similarly treated reacted, with no deaths.

On account of practical difficulties experienced with the goat blood vaccine, a goat tissue vaccine (emulsified spleen) was used in subsequent work, with even more satisfactory results. This vaccine is issued in sealed ampoules containing 1 g. of goat spleen, which is emulsified in 100 c.c. of saline at the seat of the outbreak, and inoculated immediately. The virtues claimed for the tissue vaccine are great convenience in dispatch; greater viability (seven days at room temperature, maximum temperature 85°F.); greater economy of production—one goat produces 2,000 to 2,500 doses compared with 500 doses of the blood vaccine—and that it can be supplied freely from headquarters, in a form serviceable within an hour of receipt (obviating the delay of three to four days where goat blood-donors have to be inoculated at the seat of outbreak in the preparation of the blood vaccine).

Of 10,119 contact cattle inoculated with the tissue vaccine, 167 (1·6 per cent.) reacted, of which 0·2 per cent. were probably incubative when inoculated. 0·5 per cent. deaths were recorded. Of 645 buffaloes, 8 per cent. reacted, with no deaths. Buffaloes put to work reacted strongly to the vaccine, and half-doses (0·5 c.c.) were found adequate in these circumstances. All inspections of cattle were made five to six and ten to eleven days after vaccination, clinical symptoms of fever being the criterion of reaction.

Sixteen vaccinated cattle and four buffaloes subsequently tested for immunity by inoculation of 1 c.c. of virulent blood gave no evidence of reaction (experiment apparently uncontrolled).

E. O. L.

* * * * *

[**"Immune" Cattle Plague Antiserum Manufactured in the Field.** Stewart, J. L. (1935.) *J. Comp. Path. & Therap.* **48.** 2. 117-124.]

We reproduce below the author's summary of this account of his experiences in the field manufacture of this antiserum in the Gold Coast,

which he is prompted to record as there appears to exist considerable doubt as to the possibility of making field anti-rinderpest serum of a standard titre.

. . . . .

Field anti-rinderpest serum manufacture, by the process of selecting serum makers by observing visible or severe reactions, produces serum of a very varying potency, though quite good results may occur in areas where the cattle have a certain resistance to cattle plague. In susceptible districts, high casualties invariably occur from time to time. This method is empirical.

Improvement in titre is shown when attention is paid to the thermal reaction, but when visible symptoms or severe clinical response to double inoculation are also considered a selecting factor, the serum makers still produce a product which varies and may cause heavy mortality from time to time.

It is shown that field serum produced only from cattle which have shown a definite benign thermal response to immunisation is, in practice, constant in titre and yields consistently good results, without high casualties, in certain individual herds. Detailed figures of over 13,000 cattle treated by such serum are shown, and since then 20,000 cattle have been immunised in different parts of the country with even better results. At no time have casualties appeared in particular herds, as was the case with the two previous methods of technique.

SIR F. GOWLAND HOPKINS AND QUACK MEDICINES

Sir Frederick Gowland Hopkins, president of the Royal Society and Professor of Biochemistry, University of Cambridge, in his address to students at the opening of the ninety-fourth session of the School of the Pharmaceutical Society of Great Britain said that it was difficult now, as always, for those who served the public to avoid supplying it with what it demanded. The general public to-day, and not its humbler sections alone, was for the most part too ignorant to be protected from the influence of the advertisements incessantly before its eyes, which proclaimed the supposed merits of a crowd of quack nostrums or expensive proprietary articles of little real value.

There were many individual pharmacists to-day who did their best to protect it from such, and there were committees in being to-day which were considering possible remedies for the evil. The problem involved in combating it, whether by State action, or otherwise, was extremely difficult.

But biological science was gaining a foothold in general education. It was beginning in schools and was increasing its influence in the universities. The time was not far distant when even average members of the community would know much more about their bodies and their bodily functions than they knew to-day, and would no longer display the faith which was born of ignorance.

Report

CEYLON

REPORT OF THE GOVERNMENT VETERINARY SURGEON, 1934

"Ceylon is at last free from rinderpest and should remain free in future if adequate safeguards are maintained against introduction of the disease."

Such a sentence as the foregoing makes good reading in a report from one of our overseas territories. It denotes the success of efforts made during a difficult and anxious time, and, no doubt, the partial relaxation of restrictions which, although necessary, always tend to hamper trade and progress. The work of a department is judged by the public by its effect upon general conditions and it is hoped that the steps taken will keep Ceylon free from rinderpest in the future.

There were 3,668 cases of foot-and-mouth disease reported, of which 79 proved fatal. As no further remarks are made in connection with this disease, it is presumed that it is looked upon as a necessary evil and not of great economic importance. It will, however, be interesting to see what effect this disease will have upon the efforts which are being made to improve the standard of the livestock industry. Over 1,000 persons received anti-rabies treatment during the year, and, as in other colonies, the reservoir of the disease is thought to be among wild carnivora. Of over 40,000 carcases inspected at slaughterhouses, only one was found to be infected with tuberculosis: when will such a statement be possible in an English report? Bovine contagious abortion was diagnosed for the first time.

A sum of money has become available for measures designed to improve the livestock of the territory. The inauguration of the work was, almost immediately, hampered by the severe outbreak of malaria in Ceylon. The officer in charge, and all his staff, became ill and work had to be abandoned for the time being. Although it is hoped to improve the standard of the dairy animal, a discouraging factor is the aversion of the Singhalese to drinking milk. Therefore, not only has the dairy industry to be encouraged but a market for milk has to be created; a most difficult problem indeed.

The department is in charge of a dairy farm at Colombo and a subsidiary one elsewhere. Extracts from the accounts show that a profit was made in both cases. The benefits of Government institutions are usually limited to the potential value of the information obtained and published. It is rare to have, in addition, a balance upon the right side of the ledger.

QUARTERLY MEETING OF COUNCIL, N.V.M.A.

Summary of Proceedings

The next issue of this journal will contain the official report of the well-attended meeting of Council, N.V.M.A. the extensive agenda of which was expeditiously carried through at the Connaught Rooms, Great Queen Street, W.C., under the newly-elected President, Captain J. R. Barker, of Hereford, on the afternoon of Tuesday, October 1st, 1935.

The main item in the legacy of business from the previous meeting of Council was consideration of the vexed question of free tuberculin testing of herds, to which practitioners, as represented by their Society, take grave exception. Discussion of a resolution on the subject from this Society resulted in the setting up of a committee to consider the whole question of free service.

Professor Macqueen, having dropped his bomb, at Edinburgh, into our "Branch" dormitory (after carefully stressing the gratifying fact that wide-awake Scotland has a room to itself) complacently watched the sheets of explanation from the Officers of the Branches concerned come down as correspondence to the London meeting. And on the table it seems they must continue to lie, for there was no hope of animation in them—unless young Wales, as yet unborn, should prove lively enough to keep awake the three somnolent Branches.

Life was restored to the proceedings by the recital of the part played by the Association in the bombardment of the Minister of Transport in protest against his ill-conceived proposals to penalise the horse and his owner for the benefit of those who prefer their creeping queue mechanised, and a sub-committee was appointed to co-operate with representatives of the National Horse Association in any further measures that body may decide to take to induce the Minister to change his mind.

Council evidenced both their appreciation of the compliment and of the importance of the occasion in question, by responding, through the person of their President, to the invitation to be represented at the seventy-fifth anniversary meeting of the National Veterinary Medical Association of Sweden.

It was scarcely to be expected that the highly-satisfactory arrangements made by the Association with the Ministry of Agriculture to safeguard the interests of practitioners in the working of the Veterinary Investigation Officers scheme by the drafting and issue of revised instructions to these officers, would not meet with short-sighted opposition somewhere, and correspondence forwarded by the Ministry revealed a source of such in the Merioneth County Branch of the National Farmers' Union. The Ministry's reply—a model of reason and discretion—should surely convince the most ardent defender of the farmer's pocket that the payment of the practitioner's fee under the regulation which makes it necessary for the farmer to call him in when he wishes the Investigation Officer to visit the farm, so far from curtailing the sphere of usefulness of the scheme, is essential to its successful continuance and perhaps even to that of the ability of the farmer to command the services of a veterinary practitioner for any money, should the latter be forced, by impossible conditions of practice, to go elsewhere for a living. Naturally, the Council entirely endorsed the Ministry's view that relaxation of the restrictions could not be countenanced.

The remaining item of correspondence was, in subject, a related communication, in which the Agricultural Research Council gave a highly satisfactory reply to the representations made by the Association that the interests of veterinary surgeons in the areas concerned should be preserved in the investigations into certain diseases of sheep which are being carried out by research institutes and Veterinary Investigation Officers under the supervision of a Committee of that Council and in collaboration with the Ministry of Agriculture. Thus assured, the Council agreed to commend the scheme of investigation to members of the Association and to make it known to the profession through the medium of this journal.

Having acclaimed the announcement that membership of the "National" now stood at the record figure of 1,750, the meeting passed to the consideration of committee reports.

Acceptance of the scale of subsistence allowances for members of deputations, recommended by the Finance and General Purposes Committee, was followed by an endorsement of the Committee's view that, while the principle that representatives of Divisions should be paid at least part of their travelling expenses in attending Council and committee meetings in London should be accepted, the source of such financial assistance should be the Divisions themselves, and not the parent body, which has no hand in the appointment of divisional representatives and no power over their instructions.

The question of new and better accommodation was, perhaps, carried a stage further by the decision to seek the views of the Royal

---

The staff appear to have carried out useful work during a period when conditions were difficult.

J. S.

College on the suggestion that that body and the N.V.M.A. might combine in securing premises to house the two organisations.

On the recommendation of the committee it was decided that the office of President-Elect be established, and their view was accepted that it was not necessary to have the occupant of the post elected as a Vice-President.

The important business of electing the Standing Committees of the Association (selection having been made with due regard to the wishes of the Divisions and individual members) having been satisfactorily transacted, Council passed to the consideration of "Any other business." Under this heading it transpired that negotiations had passed between the officers of the Association and those of the Borough of Scarborough which were well calculated to serve the ceremonial, social and economic interests of the N.V.M.A. and its members in connection with the 1936 Congress which, if the Provisional Committee finds itself able to meet the wishes of the Council, will be held there during the early part of September.

The diminishing appetite of members for business at the end of a long meeting was revived on a report of the special committee appointed to deal with a communication from the Ministry of Agriculture inviting observations upon the revised Tuberculosis (Attested Herds) Scheme. The report stated that the measures proposed by the Ministry to make the scheme more attractive to herd owners were welcomed, but that a deputation, which had been favourably received, placed before the Ministry certain suggestions for the enhancement of the likelihood of success attending the operation of the scheme—notably that the official tests should be carried out by veterinary practitioners in conjunction with and under the supervision of the Ministry's inspectors.

DERAILMENT OF TRAINS BY CATTLE

The danger of trains being derailed at level-crossings by cattle is referred to by Colonel A. C. Trench, Inspector of the Ministry of Transport, in a report issued on an accident on July 15th at Gwerny-Gae Farm crossing, between Pontsarn and Peterston, on the Cardiff-Swansea main line of the Great Western Railway.

A passenger train, travelling at about 50 miles an hour, ran into a herd of cattle. Four cows were killed and two had to be destroyed. The leading wheels of the trailing bogie of the first coach were derailed, but there was practically no damage to the train and no personal injuries.

"It is clear," says Colonel Trench, "that under normal conditions cattle can cause derailment of a locomotive-hauled train; it would appear that this risk is likely to be substantially greater in the case of multiple-unit trains, the use of which is now extending into country areas where cattle crossings are more frequent than in the suburban areas to which this type of train has hitherto been confined."

R.C.V.S.
QUARTERLY MEETING OF COUNCIL

Summary of Proceedings

At the Quarterly Meetings of Committees and Council of the Royal College of Veterinary Surgeons, the report of the proceedings at which will shortly be published in these columns, many matters of importance to the profession were dealt with besides the ordinary routine business of the College.

The unforeseen announcement at the commencement of the Council Meeting that Professor Craig had automatically lost his seat on the Council by his removal to Liverpool was received with surprise and regret. Professor Craig, however, was a representative of the Irish Free State, and a new member will no doubt be nominated by the Free State Veterinary Council to take his place. Professor Craig is now free to offer himself for election to the College Council in the usual way, but this means that the Council will be deprived of his services until July next.

The recommendation of the Examination Committee that the question of the formation of a Canine Nurses Association be remitted to the consideration of the N.V.M.A. was approved by the Council, with an expression of opinion that it is desirable that canine nurses should be registered after having undergone a proper course of training and a proper examination.

Among the various matters dealt with by the Registration Committee, the matter of the advertising of boarding kennels owned by laymen as being "under veterinary supervision" appears to need careful watching. The Council have declared on the recommendation of a Special Sub-Committee that there is no objection to such advertisement where in fact the kennels are regularly inspected by veterinary surgeons. The obvious danger is that the supervising veterinary surgeon may find in fact that he is merely being used to cover unqualified practice by the owners of the kennels. This is a danger which can be avoided, if the veterinary surgeon insists that no advice or treatment must be given by any other person. His visits must be sufficiently frequent to prevent the occurrence of unqualified practice in his absence, and any evidence that this understanding is not being loyally carried out by the owners of the kennels should mean the instant severance of the member's connection with the kennels.

The Parliamentary Committee recommended that representations should be made to the War Office in favour of an increase of pay for majors of the R.A.V.C. of more than 22 years' service in the Corps. A recent Royal Warrant has

been issued, granting an increase of 3s. 6d. a day to majors in the R.A.M.C. who have served for 22 years or more, and whose promotion to lieutenant-Colonel has been unduly delayed. There is a similar abnormal situation in the R.A.V.C., and it seems only equitable that some special provision should be made for majors in the R.A.V.C. similar to that made for majors R.A.M.C.

The question of the provision of additional accommodation for the College has taken an interesting turn. A letter from the N.V.M.A. was considered by the Special Committee of the College, in which the suggestion was made that the College and the Association might, in the interests of both, combine to secure suitable headquarters. The Council decided that the question was worthy of consideration, and has asked the Special Committee to confer with a committee of the N.V.M.A., and to report later. It is to be hoped that the two committees will meet shortly to go into the whole matter. There are reasons for and against such a solution, but we can well leave the matter to the goodwill and intelligence of the members of the two committees.

N.V.M.A. Divisional Reports

NORTH WALES V.M.A.*

MEETING AT RHYL

A meeting of this Division was held at the Imperial Hotel, Rhyl, on Friday, July 19th, 1935, at 2.15 p.m.

The President (Mr. H. Llewelyn Jones) occupied the chair, and there were also present Messrs. Bate, Booth, Burrow, Cane, Cartwright, H. V. Hughes, W. F. Hughes, W. Jones, W. O. Jones, R. L. Lewis, Dr. R. F. Montgomerie, Messrs. G. J. Roberts, R. S. Rowlands, W. T. Rowlands, H. Williams and Wynne. Messrs. Anthony, Bowen, Dr. T. Dalling, Messrs. Kay, McGaughey and J. Ll. Williams attended as visitors.

Apologies for absence were received from Sir Frederick Hobday, Dr. Share Jones and Mr. Savage.

The minutes of the previous meeting, having been printed in *The Veterinary Record*, were taken as read and were confirmed.

Obituary.—The President referred to the loss which the profession in North Wales had sustained in the passing of Messrs. John Hughes and Wynn Lloyd. Mr. Lloyd was one of the first members of the Society and had always been interested in its activities. His death removed a very old friend. Mr. Hughes had also been a member of the Society in its early days, and although not actually a member at the time of his death, he had only recently expressed an intention of renewing his membership. The members stood in silence as a tribute to the memory of their deceased colleagues and it was agreed that the Secretary convey to their families an expression of the members' sympathy.

Communications.—(1) From the Victoria Veterinary Benevolent Fund, appealing for a renewal of the Society's subscription. It was agreed that the Society subscribe £2 2s. for each of the years 1934 and 1935.

(2) From the National Horse Association, regarding a renewal of subscription. The Secretary also submitted particulars regarding another society's activities in connection with the employment of horses, in accordance with an instruction from the previous meeting. It was agreed that no subscription be sent to either body.

(3) From the N.V.M.A. referring (*a*) to the activities of the Agricultural Research Council in connection with braxy-like diseases, and (*b*) to the amended Instructions to Veterinary Investigation Officers issued by the Ministry of Agriculture. It was agreed that every support be accorded to the two schemes.

(4) From the Royal College of Veterinary Surgeons relating to the Library Endowment Fund. It was agreed to subscribe £2 2s. for the current year.

Proposed Institution of a Welsh Branch, N.V.M.A.

The Secretary reported that representatives of the Division—Dr. Share Jones, Mr. E. P. Edwards and himself—had met the representatives of the South Wales Division recently and had carefully considered the advisability of the two Divisions taking joint steps with a view to the institution of a Welsh Branch of the "National." The meeting was attended by Mr. Anthony, of Birmingham, and at the request of the representatives present Mr. Anthony drew up a memorandum which had been approved of by the representatives and which now required confirmation by the Divisions. After reading the memorandum the Secretary observed that in his opinion it was an excellent statement of their case and he felt that they were greatly indebted to Mr. Anthony for the memorandum.

The President then invited Mr. Anthony to say a few words in connection with the proposal, and Mr. Anthony gave a brief account of the events leading up to the proposal; he stressed the necessity for adequate Welsh representation on the Council of the parent body. It was agreed that the memorandum be

* Received for publication September 25th, 1935.

approved and submitted to the N.V.M.A. Council.

Nomination and Election of Members.—The President said he desired to say how pleased he was to see such a well-attended gathering that afternoon. He expressed, on behalf of the Society, a warm welcome to the visitors and was happy to report that two of them, Dr. Dalling and Mr. J. Ll. Williams, intended to join the Society. The Secretary associated himself with the President's remarks and, on the proposition of Mr. Cane, seconded by the Secretary, Dr. Dalling and Mr. Williams were nominated for membership.

Messrs. J. N. Bowen and O. C. M. Kay, having been previously nominated by the President and Mr. Cane, were unanimously elected members.

Paper.—The President then called upon Mr. Anthony to address the meeting on "The Accredited Herds Scheme as a possible First Step in the Eradication of Bovine Tuberculosis in Wales." [Mr. Anthony's paper is reproduced, together with a report of the ensuing discussion thereupon, at the commencement of this issue.—*Editor.*]

Mr. Wynne proposed a hearty vote of thanks to Mr. Anthony for his kindness in coming over to give them such a stimulating address. This was seconded by Mr. Bate and carried amid applause.

A discussion then took place regarding the question of fees payable for the inspection of herds, and Mr. Wynne, on the invitation of the President, gave an outline of the working of the scheme in his area (Denbighshire). It was agreed that the Secretary convey the information to the N.V.M.A.

Next Meeting.—After discussion it was decided to hold the next meeting—the Annual Meeting—at Rhyl, and Dr. Montgomerie agreed to prepare a paper for discussion.

The meeting then terminated.

H. V. Hughes, *Hon. Secretary.*

* * * * *

ROYAL COUNTIES V.M.A.*

SUMMER MEETING AT COWLEY

Morris Works Visited

An ordinary general meeting of the Royal Counties V.M.A. was held at Cowley on July 19th, 1935. The President (Captain R. E. C. Bullen) occupied the chair, and the following members were present: Messrs. J. R. Baxter, H. Bell, Captain H. B. Collet, Mr. P. Crosfield, Major J. J. Dunlop, Mr. R. C. G. Hancock, Captain J. R. Hewer, Mr. E. J. Heather, Major F. J. Taylor, Mr. F. T. Trewin, Lieut.-Colonel G. K. Walker and Mr. J. Willett, together with the following visitors: Mrs. A. K. Baxter, Mrs. Bullen, Mrs. C. A. Butler, Mr. J. D. R. Clive, Mrs. Crosfield, Mr. R. C. Davidson, Mr. and Mrs. A. C. Fraser, Miss Grover, Mrs. R. C. G. Hancock, Mrs. E. J. Heather, Mr. J. Hewens, Mrs. J. R. Hewer, Mrs. Napier, Mr. D. J. Nicholson, Mrs. J. Barrett Stennett, Mr. J. Stewart, Mrs. J. Stewart, Mr. M. E. Stride, Mr. E. Taylor, Mrs. F. T. Trewin and Mr. E. Wallace.

The minutes of the previous meeting, having been published, were taken as read.

Obituary.—The President, before proceeding with the business of the meeting, said that it was with deep regret that he had to refer to the loss which the Association had sustained since the last meeting through the death of two of its members—Mr. Broad, of Marlborough, and Mr. Howard, of Dorking. The Association had been represented at the funerals and in each case a wreath had been sent. The meeting stood in silent tribute to their memory.

The Hon. Secretary had already written to Mrs. Broad and her son conveying the sympathy of the members, and he was instructed to write a similar letter to Mrs. Howard. The Hon. Secretary read a letter thanking the members, on behalf of Mrs. Broad and her son, for their sympathy and the wreath which had been sent.

R.S.P.C.A.—A letter was read from the Countess of Verulam inviting the Association to appoint a representative to sit on the Herts. West Branch of the R.S.P.C.A. Mr. Gale, of Watford, was appointed and, subject to his willingness to act, the Hon. Secretary was instructed to notify the Countess of Verulam accordingly.

Nomination.—Mr. T. A. R. Filgate, M.R.C.V.S., Mill House, Faringdon, Berks., proposed by Mr. B. G. Catmur, seconded by Lieut.-Colonel G. K. Walker, was nominated for election to membership.

Fees for Dairy Herd Examination.—The Hon. Secretary read a letter from the General Secretary of the N.V.M.A. to the effect that the Appointments Committee had again considered the question of setting up a "National" scale of fees to be paid to veterinary surgeons for the examination of dairy herds for Grade "A" licence under the Accredited Herds Scheme, but in view of the varying conditions obtaining in the various counties, the committee did not feel that it was possible to arrive at any fixed fee which could be adopted throughout the country.

Place of Next Meeting.—It was decided to hold the November meeting in London. It was also decided that instead of holding an afternoon meeting, as in the past, the proceedings should commence at 5 p.m.

. . . . .

Prior to the business meeting the members and their visitors had been escorted over the various departments of Messrs. Morris Motors, Ltd., Works at Cowley. The party had then been entertained to tea at the club.

* Received for publication October 1st, 1935.

The President, in thanking Morris Motors, Ltd., on behalf of the Association, referred to the very instructive afternoon which had been spent in the works under the able guidance of Mr. Bowls and his team of helpers. The President also paid tribute to Mr. Jack Hewens, of Maidenhead, who had been of the greatest assistance to the Hon. Secretary in arranging the visit to Cowley. Mr. Hewens was present as a visitor.

Mr. Bowls thanked the President for his remarks and said that it was a great pleasure to them at Morris Motors, Ltd., to have a visit from such a society as the Royal Counties V.M.A.

After tea the members adjourned and transacted the business on the agenda as reported above. H. Bell, *Hon. Secretary.*

R.A.V.C. OLD COMRADES' ASSOCIATION

ANNUAL RE-UNION DINNER

The Fifteenth Annual Re-union Dinner of the R.A.V.C. Old Comrades' Association was held at Anderton's Hotel, Fleet Street, E.C., on Friday, October 4th, 1935, at 7.30 p.m., and the attendance was well above the average.

After the loyal toast the Chairman, Major-General W. S. Anthony, C.B., C.M.G., Colonel Commandant of the R.A.V.C., in proposing the toast to "The Association" said:—

"We meet to-night on the fifteenth consecutive occasion for the re-union of the Old Comrades' Association. The numbers, I should say, must be above the average.

"The purpose and aims for which we meet to-night show that things are not waning. It is a matter for congratulation that, year after year, such numbers should come and such good spirit be shown. There must be some powerful attraction, otherwise we would not come here; and the spirit and instinct in which we continue to come here must be a very powerful one—to revive old memories and renew associations of more strenuous days. But is that all? Is there no other significance attaching to our meeting here? The year of grace 1935 is fast slipping into history, and it has been one of the most momentous years in the record of our nation. It has shown the world, on the occasion of the King's Silver Jubilee, a nation rooted to the Throne. It shows the world an example of integrity, order and discipline, and that our nation is a firm rock in troublous waters.

"If we ask ourselves how this happy state of affairs comes about, we cannot say that any one institution alone conduces to those happy and determining qualities which make up our national spirit and state of readiness for service, our calm discipline of men in the time of trouble, and our faith and belief in our destiny in the world.

"We have here in plenty, on every occasion, comradeship, loyalty and service: those wonderful qualities which make up the Empire. But these alone are not enough. We must have replenishment, *i.e.*, young men, and it is that which gives me such great pleasure to-night—to see so many young faces present. When an Association such as this can show such a gathering of old and young it need have no fear for the future. It is here that the Old Comrades' Association comes in, in our happy re-union; and in this I see a greater purpose that we serve by coming here.

"Let us go forward without fear, without doubt, and in the knowledge that we give of our best, and I say that to-night without misgiving we can honour the toast of the Old Comrades' Association." (Applause.)

Major-General J. J. B. Tapley, C.B., D.S.O., Director-General, Army Veterinary Services, in replying to the toast, said:—

"Our thanks are due to General Anthony for proposing the toast of our Association and for the manner in which he has proposed it. No matter how well we think we know the Association, we never get a speech from General Anthony on the subject unless we gather some new point which impresses us and which we can take home and think about.

"As regards the Association itself, it is in a very healthy condition. One has only to look round this room to-night to realise that. Any gathering of Old Comrades should be cheerful, and undoubtedly it is so to-night. Not only have we a large gathering here, but, in addition, we have never had so many young men, and it is that fact which convinces me that the Association is successful.

"Organised and managed as this Association is, we have no fear for its future, and I do not think that, having said that, you expect me to say anything more."

Among those present were:—

Major-General W. S. Anthony, C.B., C.M.G., President; Major-General J. J. B. Tapley, C.B., D.S.O., D.G.A.V.S., Senior Vice-President; Major-General Sir John Moore, K.C.M.G., C.B., Life Vice-President; Colonels W. H. Walker, D.S.O., O.B.E., and H. E. Gibbs, D.S.O.; Lieut.-Colonel S. L. Slocock, M.C.; Majors P. S. Sparling, M. A. Murphy, Captain C. Budd, M.B.E.; Lieut. W. E. Turton, Messrs. W. Horsfield, D. F. Maccabe, R.S.M.s J. E. Wood and C. A. Drew, members of the Committee of Management; and Captain A. J. Warburton, Hon. Secretary and Treasurer.

Brigadier A. J. Williams, D.S.O.; Lieut.-Colonels J. R. Steevenson, D.S.O., and A. E. Clarke; Majors G. V. Golding, R. M. Bamford, O.B.E.; J. J. Plunkett, O.B.E.; W. B. Howe, G. E. Oxspring, O.B.E.; J. Southall, Glyn Lloyd, D.S.O.; B. J. W. Nicholas, P. F. Woodland, E. C. Bowes, K. S. Simpson, J. Robertson, J. B. Hare, E. S. O'Kelly,

A. W. Reid, T.D.; Captains A. G. Ralston, J. Daunt, C. Collingwood, H. B. Collet, Lieuts. G. V. Short, A. D. Seton, I. H. Chalmers, R. H. Duff, E. H. Lewis-Bowen, K. I. Barlow, S. L. Trevor and W. E. Turton, Messrs. M. F. Absolom, R. Allsopp, H. Briddes, E. P. Biles, G. Brown, W. F. Crome, J. Clare, E. W. Coldham, J. C. Harrigan, R. Hickson, W. H. Harrison, P. Holland, L. F. Hayes, H. E. Ison, H. E. Jones, J. Kinsella, W. T. Lewis, C. E. Mant, T. Moloney, B. Moss, A. T. Murrell, E. W. Markall, J. Nash, L. Norman, T. E. Percy, J. P. Print, J. H. Parkinson, H. J. Reavell, J. C. Renwick, B. Southwell, G. Sayer, H. J. Stockton, E. E. Scott, G. Sillibourne, H. H. Sygrave, A. G. Wicks and H. Young.

N.C.O.s and men from No. 1 Depôt Section, Woolwich; No. 2 Section, Aldershot; No. 3 Section, Tidworth; School of Farriery, Aldershot, and Detachment, Colchester.

Letters of apology for absence were received from Colonels A. G. Todd, C.B.E., D.S.O.; H. J. Holness, D.S.O.; Lieut.-Colonel H. Greenfield, O.B.E.; Majors C. Davenport, O.B.E.; H. E. Irwin, Captain A. L. Wilson, Messrs. A. Henderson, T. Rourke, E. R. Gregory, W. C. Pepperell and R. Lumley.

A fine programme of music was rendered by Mr. A. C. Ballinger's trio during the evening.

ANNUAL GENERAL MEETING

The Annual General Meeting was held prior to the dinner, with the President, Major-General W. S. Anthony, C.B., C.M.G., in the Chair.

The minutes of the last meeting were read and confirmed.

A statement of accounts, presented by the Hon. Secretary, was then discussed. It was pointed out that since the accounts were closed a sum of £20 had been received from the funds of the Northern Command Tattoo. This would be shown in the next statement of accounts. It was proposed by General Tapley, seconded by Colonel Gibbs, and carried unanimously, that the accounts be passed.

Colonel Walker announced that the Committee of Management had invested another £100 in 3½ per cent. War Loan.

The nomination of two successors to Lieut.-Colonel Turner and Major Davenport on the Committee of Management was brought forward. Colonel Walker drew attention to the fact that it was desirable to have those who could be relied upon to attend meetings; he proposed Captain J. Daunt and Mr. W. T. Lewis. The proposition was seconded by Major Sparling, put to the meeting and carried. The question of an honorarium to the Hon. Secretary, was discussed, and it was agreed, on the proposition of Sir John Moore, seconded by Colonel Gibbs, that the amount of £20 for the year be approved.

The next Annual Dinner was fixed for October 2nd, 1936, at Anderton's Hotel, Fleet Street, E.C., at 7.30 p.m., the Annual Meeting to be held on the same day at Anderton's Hotel at 6.30 p.m.

A recommendation that the accounts be closed on June 30th instead of August 31st was put to the meeting and carried.

Votes of thanks to the Committee of Management and to General Anthony for so ably presiding brought the meeting to a close.

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Oct. 23rd.—Meeting of the Section of Comparative Medicine of the Royal Society of Medicine, at the Society's House, 1, Wimpole Street, W., 5 p.m.

Oct. 24th.—Meeting of the Western Counties Division, N.V.M.A., at Taunton, 2 p.m.

Oct. 25th.—Meeting of the Yorkshire Division, N.V.M.A., at Leeds, 3 p.m.

Oct. 28th.—Meeting of the Editorial Committee, N.V.M.A., at 2, Verulam Buildings, Gray's Inn, W.C.1, at 4 p.m.

Nov. 7th.—Annual Dinner - Dance of the Central Division, N.V.M.A., at the Mayfair Hotel, W.1, 6.30 p.m. for 7 p.m.

* * * * *

PERSONAL

Engagement.—Swann—Humphrey: The engagement is announced of Mr. Harold C. Swann, M.R.C.V.S., of White House, King's Lynn, and Edna J. S. Humphrey, younger daughter of Mrs. and the late Mr. B. C. Humphrey, of Lodge Farm, Hunstanton, Norfolk.

On Leave.—Mr. N. Burke, M.R.C.V.S., has arrived home on leave from Nigeria.

Retirement.—Captain Hubert M. Webb, M.R.C.V.S., Government Veterinary Officer, Bechuanaland Protectorate, reached England in September, prior to his retirement at the end of the year.

* * * * *

R.C.V.S. FELLOWSHIP EXAMINATION

As the result of an examination recently held by the R.C.V.S., Major G. E. Oxspring has been awarded the Diploma of Fellow. His thesis was entitled "The Radiology of Navicular Disease, with observations on its Pathology."

* * * * *

R.C.V.S. OBITUARY

Nelder, William Barons, F.R.C.V.S., 24, Dix's Field, Exeter. Graduated London, March 22nd, 1887; died October 13th, 1935, aged 71 years.

ORGANISATION OF AGRICULTURAL RESEARCH

Inasmuch as "agricultural research" includes "veterinary research" in this country, and special mention is made in the following editorial article in *Nature* (October 5th, 1935, **136,** 3440) of certain significant factors affecting the prospects of veterinary research, the whole review, coming as it does from one of the highest sources of scientific information in the country, is reproduced as it stands. It is earnestly to be hoped that the state of affairs here depicted will soon be remedied, so that, in view of the great economic importance of the subject, competent veterinary graduates may be attracted into research.

. . . . .

"State assistance to agricultural research in Great Britain began with the Development Act of 1909, and in accordance with the principle of that Act, the finance of the schemes then initiated remained with the Development Commission, while the administration rested with the departments of agriculture, until in 1930 the Agricultural Research Council was set up. This council, though equally under the Privy Council, has not quite the same status as its parallel bodies, the Department of Scientific and Industrial Research and the Medical Research Council, both of which administer directly the whole of the funds available from the Treasury for research in their subjects. It would be difficult to explain to a foreigner the curious machinery which now prevails for the purpose of making grants, involving as it does the Research Council, the Development Commission, the two departments of agriculture in England and Scotland, and finally the Treasury.

"A recent article in *Planning* is very insistent on simplification, on the ground that all these separate strands of red tape not only result in delay in the consideration of applications for grants, but also are obstacles to the proper planning of agricultural research. Of course, no one would devise such an organisation *de novo*; it grew by stages, its excuse is the dread all Governments have of legislation, its justification is the necessity of maintaining continuous touch between the research workers and the agricultural departments, the administration of which should be guided by the conclusions reached by research. It may be doubted whether delays are greater than in any other dealings with a Government department. Speed of action is the attribute only of an autocracy, and of an autocracy on a small enough scale to allow of immediate access to the autocrat.

"As to planning, it was for that purpose the Research Council was set up; it surveys the whole field, it reviews the work of each Institute, and though that Institute may be financed by the Development Commission and administered by the Ministry of Agriculture, it would scarcely be able to ignore the recommendations or criticism of the Council. As the writer in *Planning* admits, the cumbrous organisation is being made to work, and so it will remain until there comes along some Government willing to spare some of its precious 'time' in order to secure order and logic in its machinery of administration.

"The article also discusses the failure to obtain any substantial addition to the funds for research from the farming community, but that is inevitable because of the way the industry is split up into small units of production. The Marketing Boards do possess powers of making a levy on their very considerable turnover that would raise ample funds for research, without imposing any perceptible burden upon the individual, but the awkward administrative question of reconciling the responsibility of the Council for the direction of research with the power of the purse possessed by the Marketing Boards is still unsettled.

"The most weighty criticism of the *Planning* article is directed against the indifferent scale of salaries prevailing in the research institutes, which it is alleged are failing to attract men of initiative and high mental capacity. But as the head of one of our universities has pointed out, only a small fraction of the men who graduate each year are really of the first grade, a fraction well below the demand that is made upon the universities by the various services, business and professions. When, however, all allowance is made for this and for the fact that research offers a sheltered career with an attraction of its own, irrespective of income, there is undoubtedly much dissatisfaction among the agricultural research workers, a small body not more than 500 in all, a large proportion of whom are not established. There is need for an unbiased review of the situation, and this is presumably within the reference of the Research Council. Agricultural research workers do need favourable terms, for they have few outlets for escape into well-paid business. It is precisely this alternative which renders recruiting for research in veterinary medicine so difficult in the veterinary profession; the great increase in administrative appointments of recent years has offered to any graduate of quality prospects much superior to those the research institutes can offer.

"We doubt if the suggestion that the Research Council itself ought to appoint super-directors of its own for each group of subjects is helpful. The man in charge of a research station, the man who is immersed in the subject, may be guided and may benefit from the critical examination of his work by men of quality in the cognate pure sciences, but he cannot be made to work to order or forgo his responsibility. If one believes in research, one must trust the research worker's personality. The practical outcome of such a plan would be to withdraw the few outstanding men of originality from the active prosecution of research into administration.

"The real function of the Research Council is not to control research nor to manage the research workers; it is to survey the field as a whole and to think out priorities, and to bring an enlightened judgment to bear upon the many proposals put before the Council. It has to decide whether the possibilities offered by the project are of the order of probabilities, and how far the pursuit of pure knowledge has an economic justification. Sometimes it will see a neglected opportunity, sometimes it must override a director in the interests of a more comprehensive organisation, sometimes it must advise a director that an investigation is becoming a routine, a blind alley. But ultimately it has to recognise that research is the product of the imagination and insight of individuals; its highest wisdom is to back the right horse.

"Finally, the writer in *Planning* directs attention to the weakness of the organisation for getting the results of research passed over to the farmer and translated into action. It is a question which troubles the agricultural administration in every country, and particularly obsesses the public men concerned with agriculture. The inherent difficulty lies in the fact that agricultural production is split up among a number of relatively weak units, limited by lack of capital and personality. In agriculture there are no great corporations the resources of which enable them to take a long view about the adoption of a new process. The educational service which is in direct contact with farmers is outside the purview of the Research Council, and is doing excellent work. But the industry will have to become organised before it can reap the full harvest of research; as the Marketing Boards gain experience, they will be able to press upon the producers, their members, the improved methods that are the outcome of investigation and knowledge."

* * * * *

EXPERIMENTS ON LIVING ANIMALS

A White Paper showing the number of experiments performed on living animals during 1934 has been issued and is available from the Stationery Office, price 9d. net. The Paper states that the total number of licensees was 1,740, of whom 444 performed no experiments. The total number of experiments performed during the year was 697,436, or 94,196 more than in 1933. The number performed with anæsthetics was 32,074, being 3,889 more than in the previous year. In no case was a cutting operation more severe than a superficial venesection allowed to be performed without anæsthetics.

Some 289 licensees reported over 133,000 experiments which were performed for Government departments, the Medical Research Council, county councils, municipal corporations, or other public health authorities; and 85 licensees performed over 292,000 experiments for the preparation and testing of antitoxic sera and vaccines, and for the testing and standardising of drugs.

* * * * *

BIOCHEMICAL BASIS OF THYROID FUNCTION

In the Oliver-Sharpey lectures, which are published in full in the *Lancet* of May 25th and June 1st, 1935, Professor C. R. Harrington, F.R.S., gave an excellent review of much of our knowledge of the thyroid gland, under the title of the "Biochemical Basis of Thyroid Function." He first dealt with the early history of the subject and showed that it was due to the careful observation of surgeons (especially Kocher, 1883) and physicians that it was first realised that the thyroid was an essential organ in man and animals and that its atrophy in the human being caused a definite disease. Shortly afterwards (Murray, 1891) replacement therapy of myxœdema was adopted, thyroid being fed successfully by the mouth. In 1897 Magnus Levy showed that the principal function of the thyroid was to control the metabolic rate of the body as a whole. Coindet (1820) and later Chatin (1850) demonstrated the beneficial effect of the administration of iodine in goitre. Baumann (1895), showed that iodine was present in the thyroid gland and that its concentration was roughly proportional to its therapeutic effect in goitre; it was present in the characteristic colloid of the gland. Kendall (1919) isolated a crystalline compound, thyroxine, which appeared to be the active principle of the gland. Since then Harrington has isolated large quantities of thyroxine and also synthesised it. He has shown that this iodine-containing amino-acid originates in the body from tyroxine. The author then discussed the rôle of iodine in the etiology of simple goitre. He concludes that the cause of all simple goitre is failure of access of a sufficiency of iodine to the thyroid. This may be due to environmental conditions (iodine-free water), to an interference with the absorption of iodine from the gut (*e.g.*, by an excess of unsaturated fat in the diet) or by the imposition of a demand upon the thyroid (*e.g.*, at pregnancy) which, with its available supplies of iodine, it is unable to supply. With the present knowledge of the small quantities of iodine actually required iodine prophylaxis is likely to reduce considerably endemic goitre and cretinism.

About half the iodine of the thyroid is present in the physiologically active thyroxine and the rest is present in the inactive diiodo-tyroxine but when the whole thyroid is examined all the iodine appears to be active, so Harrington suggests that in the gland the active molecule is really a complex of both these compounds with some other amino-acid.

The author discusses the current theories as to the causation of Graves' disease and whilst showing that analogous symptoms may be produced by excessive secretion of the thyrotropic hormone of the anterior pituitary gland, he does not consider that such a simple explanation is sufficient.

W. R. W.

* * * * *

UNIVERSITY OF SYDNEY FACULTIES OF AGRICULTURE AND VETERINARY SCIENCE

Silver Jubilee Celebration

The twenty-fifth anniversary of the founding of the Faculties of Agriculture and Veterinary Science was celebrated at the University of Sydney on August 26th of this year by an official reception, when addresses were read by the Chancellor (Sir Mungo MacCallum) and the Minister for Agriculture (the Hon. Hugh Main, M.L.A.). Presentations were also made to Professors J. D. Stewart and R. D. Watt, Deans of the Faculties of Veterinary Science and Agriculture respectively.

The beginning of the present century was marked in Australia by a growing appreciation of the national importance of the primary industries and by a more general recognition of the necessity for the application of scientific methods in the development of these industries. The lag in production which was aggravated annually by losses accruing from animal and plant diseases and insect pests caused such a depletion in the national revenue that it became a matter of grave concern to the thoughtful section of the general public. Consequently, in order to meet the need for some systematic instruction in agriculture and livestock matters, it was felt that such agricultural and veterinary colleges as existed should be supplemented by the establishment of schools in agriculture and veterinary science at the University of Sydney, and, on the advice of a committee of representatives of the Government and of the University, chairs in these subjects were endowed and accommodation for the schools provided. Professor Stewart and Professor Dickie were

appointed to the Chairs of Veterinary Science and Agriculture, and the completion of 25 years' service by these two men was also celebrated by the occasion.

Professor Stewart, acknowledging the addresses by the Chancellor and the Minister for Agriculture and the numerous congratulatory messages which had been read by the Registrar, said that the thanks of the Faculty were due to the University for all it had done to place veterinary education on a proper footing in Australia, and to the Government for subsidising the University, providing the main building of the veterinary school, and placing on the Statute the Veterinary Surgeons Act.

The Professor pointed out that the effective age of the veterinary school was much less than 25 years, for it was only in the past ten years that it had functioned fully, due to the difficulties inherent in the teaching of a science about which much misunderstanding prevailed: for example, the popular misconception that the horse was the only animal requiring veterinary attention and that the advancement of motor traction was thus a distinct menace to the veterinary profession, in disregard of the fact that veterinary science has a much wider application—its chief objective being to protect an important source of their national revenue by safeguarding the health of their flocks and herds. Realisation of this, however, had led to the establishment of veterinary research institutes and to the absorption of many graduates by various public services, and with an increasing demand for practitioners in country districts, the supply of graduates had become too small for the demand. The Sydney Veterinary School had therefore made rapid growth latterly, there being now over one hundred students. All that was planned 25 years ago had not yet been achieved—there was still but one endowed chair in the Faculty and the veterinary hospital was yet to be built: it was impossible, however, to compete with the richly endowed veterinary schools of Europe. The future looked bright, especially as the Sydney Veterinary School was now the only institution of its kind in Australia.

* * * * *

PÂTÉ DE FOIE GRAS

"In view of the suggestion that has been made that steps are to be taken to organise in this country a British pâté de fois gras industry," writes a correspondent to *The Scottish Farmer*, "considerable anxiety has been aroused with regard to the cruelty which it is claimed is involved in its production. Pâté de fois gras is made from goose liver. To produce liver of the required size geese are allowed very little exercise for some five weeks or so, and are forcibly fed. The following is a description of the method employed: 'The fattening room I inspected was like a cellar, with a stone floor, and was lighted only from the doorway, semi-darkness and quiet being necessary to the process. The walls were lined with three tiers of pinewood cages divided into compartments, each large enough to hold a fat goose, provided with wooden bars and long troughs of water containing pieces of charcoal. Some of the geese lay in their cages, half asleep, but the majority thrust their long necks through the bars and screeched at the top of their voices. In the centre of the room were half-a-dozen feeding machines. At the top were receptacles full of maize that had been cooked in slightly salt water to a certain degree of softness. The process of feeding is extremely simple. A woman drags a protesting bird from its cage, wraps it in a piece of sacking and sits down in front of a machine with the bird firmly held between her knees. She then opens its beak, thrusts a metal tube several inches down its throat, and proceeds to turn a handle to bring down the maize.' What the geese actually suffer from owing to this overfeeding is fatty infiltration of the liver. The inhumanity in the procedure is obvious, and it will be interesting to see whether the public opinion will permit the importation into this country of the process."

* * * * *

ANIMAL QUARANTINE IN SHANGHAI

"The decision of the Chinese authorities to institute a system of quarantine for animals, such as cattle, buffaloes, sheep and goats, coming into Shanghai is to be commended, for some such measure is the only way of efficaciously preventing the importation of animal diseases from abroad," says *The Shanghai Times*. "The service is to be in charge of Dr. S. Y. Chen, chief of the Animal and Animal Products Testing Department, who has had many years of experience and who may be relied upon to institute it on sound lines. According to the regulations issued, any person importing animals from abroad must submit, 24 hours before the animals enter the port, an official application for inspection together with the inspection fee to the Bureau. The importation of animals from foreign countries may also be required to be accompanied by certificates of inspection issued by the proper Government veterinary officers of the country of origin or district of origin. Only in cases where animals are found to be free from infectious or parasitic diseases will they be allowed to be imported.

"There can be no doubt that the institution of a service of this kind, similar to that which exists nowadays in almost every part of the civilised world, should assist in the prevention of epidemics of animal diseases in this part of China. Fortunately, this part of the country has been remarkably free from serious epidemics in recent years, but we know that a toll has been taken of cattle in many parts of the North by such diseases an anthrax, rinderpest, etc. Our comparative immunity from outbreaks of these diseases in the Shanghai area is a matter for congratulation, but our feelings on this score must be tempered with regret that tuberculosis should be so prevalent among herds in this part of the country as it is reported to be. That the good health of the human population is closely bound up with that of the animals they maintain and use for food and other purposes is now generally recognised and it is eminently desirable that China should not be backward in taking all possible precautions, especially in the neighbourhood of such a big port as Shanghai with its huge population dependent upon food supplies from outside. In the International Settlement much good has been done by the building of the fine new municipal abattoir which takes care that the meat supply of the community shall be dressed under the best possible conditions, the more rigorous examination of dairies, etc. The fact that henceforth it will be impossible to import animals into this area already suffering from any form of infectious or parasitic disease, or likely to show signs thereof shortly after being landed here, is an additional safeguard to public health and convenience."

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.
All correspondence must bear the name and address of the contributor for publication.
The Editor does not hold himself responsible for the opinions of his correspondents.

* * * * *

NORTH OF IRELAND REPORT ON THE SPAHLINGER VACCINE

To the Editor of The Veterinary Record

Sir,—There appears to be a tendency in the lay press and to some extent within our profession, to accept the findings of the North of Ireland Report on the Spahlinger vaccine for bovine tuberculosis at a value which does not seem to be justified by a perusal of the Report and of the details of the experiments described therein.

If we accept the results at their face value it is agreed that there appears to be some immunising value in this method, but the results do not yet justify the claim that this immunity is any greater than that secured by such other methods as those advocated by Koch, by Calmette and Guérin, and by others.

It is unfortunate, seeing that so few animals were available, that the control groups of animals were not entirely satisfactory. Of the seven animals in the main control group two survived the "mass" inoculation of the living tubercle bacilli, a result which, without repetition with a much larger number of animals, scarcely justifies an investigator forming any definite conclusions from the results of the vaccine-treated groups. Another small control group (Group V) consisting of two animals, received culture medium alone, which should not have caused any immunity, yet one of these animals was unaffected by the dose of the virulent organisms and the other, when slaughtered, showed extensive lesions of tuberculosis.

It is claimed in the Report that the vaccinated animals withstood a period of two years' natural infection (p. 20 of Report) in addition to the inoculum of living organism, but this claim is hardly supported by a perusal of the text, for although the vaccinated and infected animals were permitted to mix they were not housed under intensive conditions but were allowed to roam at large in the fields. Furthermore, as the majority of the infected animals died in the first few months of this period it is scarcely true to say that there was an intensive risk of natural infection for the whole of the two years.

In the conclusions of the report the failure of two of the vaccinated animals to withstand the subsequent infection with tubercle bacilli is explained by the "deimmunising" effect of tuberculin, yet no mention is made of the fact that of two animals which recovered from infection in another experiment (Group II) one of these had also been submitted to the tuberculin test.

It may be said that the only safe conclusion to draw from the experiments that have taken place in the North of Ireland is that they suggest that there may be something in this method of vaccination but that no true opinion can be formed until a much more extensive investigation has been carried out. If this Report should lead to such an adequate investigation being undertaken, due regard being paid to statistical and epidemiological requirements, it may prove of real value to veterinary research even if the results prove to be unfavourable to the Spahlinger vaccine.

Yours truly,
W. R. Wooldridge.

36, Kingsfield Avenue,
Harrow. *October 14th*, 1935.

* * * * *

To the Editor of The Veterinary Record

Sir,—I have perused with interest the Report on the Spahlinger tests carried out by the Ministry of Agriculture staff in Northern Ireland, and also the editorial on the same subject appearing in your issue of October 5th.

There is, however, one paragraph of the editorial with which I venture to think very few members of our profession who have any knowledge of this subject, will agree. Discussing the alternative methods of dealing with the problem, your editorial states: "One of two methods can be adopted, namely: (1) Active immunisation by means of the injection of some form of vaccine; (2) eradication by removal and segregation of animals which react to the tuberculin test and the building up of tubercle-free herds or areas. . . . The profession has to make up its mind whether one of these methods is to be used to the exclusion of the other or whether the choice is to be decided by conditions on the individual farm. *We feel that the profession should encourage eradication on the basis of tuberculin testing and segregation of reactors as a more permanent solution of the problem.*" (The italics are mine.)

It is this last sentence with which I am constrained profoundly to disagree. I do not suggest that the time is yet ripe for compulsory vaccination with Spahlinger vaccine, and I certainly approve of the suggestion that more extensive testing should be carried out, but I think that it ill becomes a body of professional men to suggest eradication of tuberculosis on the basis of tuberculin testing and segregation as a more *permanent* solution of the problem. Surely this is contrary to all one's conception of scientific progress? Is not effective immunisation the higher aim?

Yours faithfully,
W. Leslie Dwerryhouse,
M.R.C.V.S., D.V.S.M. (Vict.)

28, Lichfield Street,
Tamworth.
October 15th, 1935.

* * * * *

RESEARCH INTO EQUINE PNEUMONIA

To the Editor of The Veterinary Record

Sir,—Colonel Rainey's letter on the above subject in your last issue contains some observations which invite an early rejoinder.

Before I begin to vindicate the statements which I made in my short review, let me, however, say immediately that I wish nothing that I write to be construed as meant to detract from the admittedly great achievement of the Royal Army Veterinary Corps in the War or as a reflection upon the general professional competence of the generous and loyal body of men who are regular officers of that corps and with whom I have had the happy privilege of working in close association during the War and again later in India.

I repeat that during the War a glorious opportunity to investigate properly the long-standing veterinary problem of the equine respiratory diseases was missed. It was missed not only in the British Army, but also in the armies of all the belligerents, including the German Army.

The German writer, Lührs, to whom I referred in my review, mentions that the promising researches in which he had taken part were dropped because horses maintained in conditions of open-air field service did not become victims to respiratory disease in the way they had suffered so severely in conditions of peace-time maintenance. This was, of course, also a common observation on the British fronts. In the large collecting centres, however, respiratory disease seems to have been serious in their army, just as it was in the large remount depôts at Home and in North America, which received remounts for the British Army. The *Brüsselkrankheit* (Brussels disease) of the Germans, therefore, appears to be the same as what Colonel Rainey has called "shipping fever." Whether this disease was identical with the common equine pneumonia is a question that could only be settled by research; Waldmann and Köbe, in a paper I referred to, were inclined to place it in a different class, which, however, was also caused by a virus acting specifically on the respiratory mucosa as its primary inciting agent. Parenthetically, it may be observed that German and Dutch authors felt assured that this disease could be readily cured by intravenous injection of salvarsan during the early, febrile, or pre-pneumonic phase of the disease. It was interesting to note that the distinguished German chemotherapeutist, Professor Hörlein, in an address on October 3rd, before the Section of Tropical Diseases and Parasitology of the Royal Society of Medicine, maintained that equine pneumonia was the only known virus disease which yielded to drug treatment.

Colonel Rainey stresses the importance of the work carried out by Watkins-Pitchford at the Swaythling Remount Depôt during the earlier part of the War. He attributes the diminution in losses from pneumonia which occurred subsequently to practical measures devised as the outcome of Watkins-Pitchford's researches. At the time I wrote my review I was familiar with this worker's report, having extracted and reviewed it shortly after publication (*Trop. Vet. Bull.*, 1917, 5, 277). Frankly, I did not think it worthy of serious notice as a contribution to our existing knowledge upon the equine respiratory diseases. Furthermore, I would submit that any practical measures of control formulated strictly upon the statements made in that report regarding the etiology of the disease would be based on false premises. The report consists of a long series of numbered paragraphs containing the author's conclusions and hypotheses, but his protocols of experimental evidence were not published. According to that report, there is usually in equine pneumonia a precedent condition of nasal catarrh which is induced, not by direct transference of infection from sick to healthy, but by depleting the physical condition of the animal, and throughout the clinical course of the disease there is present in the blood and lesions a specific organism styled Bacillus "X"—an organism admitted to be similar to, if not identical with, the common hay bacillus, *Bacillus subtilis*. "Even in the advanced septic stages the bacillus, which appears to be the primary causal organism, can be isolated without difficulty, owing to its great resistance to a degree of temperature which kills the other organisms."

The only reference I have been able to trace in the *Official History* to action taken to combat equine pneumonia bearing directly upon the above etiological claims is in the chapter devoted to the work of the British Remount Commission in North America. Dr. Gregory and Captain James Gregg (although at first this worker used defibrinated blood from convalescent cases) used rather extensively for inoculation of horses, in the early, pre-pneumonic stage of the disease, a serum—serum "P"—which they had prepared by hyperimmunising convalescent horses with Bacillus "X" and streptococci and staphylococci. No valid controlled tests are described to show that this serum was efficacious.

There is no evidence that any of these technical workers had perused the literature of their subject before they embarked on their important investigations.

Yet, in essentials, the practical measures for the control of the disease which were drafted for application both at the Home and North American Remount Depôts (*Official History*, p. 517 and p. 479 respectively) were, unwittingly, such as may now be recognised as strictly rational procedures in the light of Gaffky and Lührs' (1913) experimental findings, which were briefly summarised in my review. It will be of interest here to quote from these instructions. After mentioning as one ascertained fact "that the disease when established was not infectious under ordinary conditions, although the preliminary condition of hyperpyrexia might be," the instructions (September 30th, 1915) go on to say that "septic pneumonia among remounts and freshly joined horses, occurring subsequent to journey by rail and sea, is very frequently due to the fact that horses have been put on rail or embarked on ships while in a state of high temperature, unaccompanied by any visible symptoms of disease." Frequent temperature-taking is then prescribed, so that animals in the earliest stage of disease can be detected and rested and segregated in hygienic surroundings, and disinfection carried out.

This simple and apparently highly efficacious system, in so far as it anticipated measures based upon what may prove to be accurate knowledge of the etiology of the disease, must be placed to the credit of the shrewd common sense of the clinical veterinary workers rather than of any assistance they (the clinical workers) had received from imperfectly conducted bacteriological research. In this respect, the system calls to mind the efficacy of the simple plan devised by Professor Simonds with which cattle plague was stamped out in the '60's, after the efforts of the medical scientists of the time had failed.

If those entrusted with the British researches into equine pneumonia had been acquainted with the available literature on the subject they would have been well aware of the difficulties that had also been experienced by former workers in transmitting the disease by contact, when overt clinical cases were used as spreaders of infection, and they would have saved themselves thus a good deal of time. Moreover, Watkins-Pitchford was evidently working at Swaythling in the worst possible conditions for carrying out this class of research. Here, I would enjoin Colonel Rainey to read for himself, in original, the papers of the German workers (to which I had given references at the end of my review), notably the collected information in Lührs' (1928) paper, so that he can better assess the validity of the experimental evidence which underlay their conclusions. I need only say here that for their work they used in large numbers foals which had been specially bred and reared and the history of which was therefore accurately known.

The risks of natural infection were those incurred by close contact with artificially infected foals during the early, pre-pneumonic, and infectious phase of the disease. The vaccination experiments (which, by the way, were not written up till long after the War) were, in any case, well controlled, by simultaneous exposure of an adequate number of unvaccinated foals. Undoubtedly, a test of the kind Colonel Rainey has outlined would be a proper one to ascertain satisfactorily the value in practice of the immunity conferred by vaccination, and it is very likely that if the War had not supervened the German experimentalists would have undertaken a similar test.

It may not be out of place to observe here, seeing that Colonel Rainey has raised the subject, that in a war, when the daily expenditure of this country amounted eventually to eight million pounds, the total sum mentioned by Watkins-Pitchford in his report as having been spent on research into equine pneumonia was £351 18s., and the investigation was limited to eight months, during which time the above worker was heavily engaged in other duties, so that in writing his report he " regrets the hasty and immature nature of the work." Colonel Rainey rightly insists that the paramount function of the veterinary services in time of war was to deal with questions of horsemastership—particularly important in the case of large new armies recruited from among town dwellers. But in regard to some of the other items of duties he mentioned, the reader may fail to be impressed with what was achieved, in the absence of a trained research cadre within or attached to the Corps. The need for such an organisation was not realised, it seems (*Official History*, p. 35), until towards the close of the War, and it never came into being. Fortunately, a disease like equine pneumonia, through natural agencies, was not a menace in field service. Glanders, the scourge of former wars, was controlled because well-tried means of dealing with it were forthcoming as the result of the endeavours of laboratory workers in peace time. It cannot be said that any precision in regard to the nature of ulcerative cellulitis was obtained until Minett's researches were published some time after the War. Some conditions, such as periodic ophthalmia and vesicular stomatitis, which were not of negligible importance in field conditions did not, to say the least, receive the kind of expert enquiry they deserved. In any testimony, therefore, to the sterling services of the R.A.V.C. during the War, it cannot but be felt, looking back now, that in some directions, notably those of organisation for carrying out necessary scientific research, there was something wanting.

Lastly, Colonel Rainey wonders why work of such significance as that reported by the distinguished German researchers before the War was not followed up at once in all countries. It would now be idle for me to adduce any reasoning which would be adequate to dispel a quandary of that sort from Colonel Rainey's mind. Perhaps the words of the reply given to the lady who once asked Dr. Johnson how he came to define in his dictionary *Pastern* the *knee* of a horse may aptly explain also the universal neglect in pursuing what now seems to have been a plain course: instead of making an elaborate defence, as she expected, he at once answered, " Ignorance, madam, pure ignorance."

Yours faithfully,

" Woodlands," J. T. Edwards.
Sheets Heath,
Brookwood, Surrey.
October 12th, 1935.

The Editor acknowledges, with thanks, the receipt of the following:—

Communications from Professor W. C. Miller (Royal Veterinary College), and Mr. G. A. Sangster (Dumfries).

Report of a meeting of the Mid-West Division, N.V.M.A., from Mr. C. E. Perry, Hon. Secretary.

Diseases of Animals Acts

SUMMARY OF RETURNS

Period.	Anthrax.		Foot-and-Mouth Disease.		Parasitic§ Mange.		Sheep Scab.	Swine Fever.	
	Outbreaks confirmed.	Animals attacked.	Outbreaks confirmed.	Animals slaughtered as diseased or exposed to infection.	Outbreaks reported by the Local Authorities.	Animals attacked.	Outbreaks confirmed.	Outbreaks confirmed.	Swine slaughtered.
	No.	No.	No.	No.	No.	No.	No.	No.	No.
Period 16th to 30th Sept., 1935	11	14	6	507	2	2	6	101	58
Corresponding period in									
1934	12	13	2	79	1	2	18	63	21
1933	15	16	—	—	3	4	5	21	8
1932	10	15	1	88	6	6	2	45	13
Total 1st January to 30th Sept., 1935	261	307	40	10,715	86	172	268	1,478	872
Corresponding period in									
1934	286	325	9	663	103	171	453	1,203	736
1933	217	246	65	6,123	115	192	280	1,070	650
1932	263	326	10	950	107	167	169	1,295	629

Note.—The figures for the current year are approximate only. § Excluding outbreaks in Army Horses.